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A New Service To Digest Readers

With this issue, DIGEST readers receive the same light on textile developments of the month, but no bushel to hide what we consider the most important ones. We have selected the features of technical literature for November, twenty-two of them from thirteen different publication sources, and have printed them on the first six pages of the magazine.

You can read the digests of these twenty-two articles quickly. Thus, if your time for technical reading is limited, this special section of the DIGEST will simplify your task of keeping up with the principal technical developments of the month.

If you prefer the complete, pre-classified section as heretofore published, we hasten to add that your section is still complete and pre-classified. Every article digest in the front section also has a complete reader's reference in the regular, pre-classified section.

TEXTILE TECHNOLOGY DIGEST

VOL. 7 NOVEMBER 1950 NUMBER 11

November Features: 16-oz. Packages From New Spinning Frame--10,000-RPM Winder--Twenty Other Article Digests

NEW SPINNING FRAME BUILDS 16-OZ. PACKAGE OF 20s YARN AT 9,000 RPM OF SPINDLE.

A new spinning frame patented by E. C. Gwaltney and assigned to Saco-Lowell Shops spun 20s cotton warp yarn into 16-oz. packages on a prototype machine described by U. S. Patent 2,473,520 as also producing medium and fine yarns, such as 30s and 60s, in 12-oz. packages. Travelers on 20s count ran 1,000 hours at 9,000 rpm of spindle, while travelers on conventionally spun 20s ran approximately 160 hours.

End breakage of 20s yarn averaged only 4-6 breaks per 1,000 spindle hours, as compared to conventionally spun 20s which averaged 30-40 breaks per 1,000 spindle hours.

The new spinning (and twisting) frame was designed to produce the whole range of counts from 6s to 60s. Tests indicated that greater advantages may be obtained in medium and fine counts than in coarse counts. Purely verbal reports—based upon tests made after the publication of patent papers—say that approximately 100s yarn was spun into about 14-oz. packages with good test results.

The invention used one or more new devices called rings, in order to control the ballooning of yarn and to stabilize the figure or shape of that ballooning under varying spinning conditions. It was described as follows. The yarn passes through the traveler and then through either one, two, or three so-called rings, which are located between the traveler and the delivery rolls. The special rings are carried on rails that run alongside the frame and are connected to lifter rods. The vertical stroke of these special lifter rods is made simultaneously with those that move the regular ring rail. Motion comes originally from a conventional builder mechanism, a reciprocating bar, and rocker arms. Though the regular ring rail makes a full stroke, the special rails which carry the new control devices called rings move only a fraction of the distance. Thus, in substance, the new frame has additional methods of yarn control that permit improved twisting and winding of spinning or twisting packages, principally by means of the so-called rings, the positions of which are calculated to give inward control to the yarn balloons at points necessary for minimum yarn tension.

Yarn tension with the new rings amounts to 65% maximum variation; yarn tension without the new rings is 200% maximum variation. This improvement permits a wider choice of traveler weights than in conventional spinning where a critical relation exists between the shape of the balloon and the traveler weight.

One important long-range advantage foreseen for the new machine: operators of textile mills and manufacturers of textile machinery may both profit from its use. Spinning frames, instead of being made in a variety of gauges and built for a variety of ring and bobbin sizes, may be built to one specification. That specification—embodied in the new machine it is said—can be adapted to operate efficiently upon all counts of thread or yarn within a wide range.

Based upon test data of 30s warp yarn, the machine's immediate concrete advantages are: 1) four times larger package than regular frames; 2) only one-fourth as many doffed bobbins as regular methods; 3) one-fourth as much bobbin handling and knot-tying operations; 4) longer traveler life; 5) for finer counts, a greater proportionate cost reduction than for coarse counts.

NEW AUTOMATIC FILLING WINDER.

Pirn or quill speed of 10,000 rpm and up is achieved by a new automatic filling winder which has a rotary traverse guide that is said to remove all mechanical limitations on the speed at which the machine can be run. Winding speed is limited by yarn characteristics. Builder motion does away with necessity for fresh machine adjustments when changing the type and counts of yarn, as long as the size of the pirn or quill remains unchanged. Mfr. W. Schlafhorst & Co., M.-Gladbach, Germany. *(Textil-Praxis 27)*

FIBER-CONVERTING PLANT — COLLINS AND AIKMAN'S NORWOOD MILL.

Norwood mill handles any fiber up to 4½ in., blending as many as five different fibers by batch-bin method. 2,000-lb. batches are opened and blown to a primary batching bin, whence stock is removed and fed by hand and conveyor to blowing system that stores fiber in secondary batch bins. Stock then proceeds through Saco-Lowell F-7 feeders and single-process, two-beater picker. Control of blends is obtained by means of variable-speed drives on Sargent feeders, by

prior weighing of each type of stock entering the blend, and by processing each type of fiber in a complicated blend through a separate feeder. Blends of cotton, stock-dyed nylon, wool, mohair, and rayon in various combinations are processed. Grid bars on pickers are opened for cotton, closed for nylon and blends.

Beater speeds of 1,100 rpm, and fan speeds of 1,400 rpm are used for all stocks. Cotton and blended laps weigh 16 oz. per yd., 45-52 lb. per lap; nylon laps are 13-oz.-per-yd. products, weigh only 28 lb., and have roving ends wound onto surface for handling convenience. Nylon is carded once (roller-top or flat card) at 8.7 lb. per hr., in 50-gr. sliver; blends may be carded twice, first on the roller-top card. From .70 to .86 hank rovings are made by Bird-system frames, the feature of which is overhead creel (using Eclipse bobbin holders) that is suspended above the working aisle between two roving frames for convenience of roving operator who, in tending two roving frames, does not have to leave the center aisle to creel. High drafts on spinning are used to produce nylon 34.5 worsted count, for example, on 3-in. rings at 8,000 spindle rpm, with Saco-Lowell Z-2 drafting. On 2-in. ring frames, spindle speed of 9,000 rpm is maintained. (*Textile World*, Oct. 1950)

LUMMUS SUPER-JET CLEANER.

The new air cleaner of cotton, which has been used following gins, is now adapted for opener-room cleaning of cotton. The super-jet impels the cotton with a blast of high-speed air to force the stock over a curved path. Foreign matter tends to follow the curvature of the path, while the lint is carried on the top of the air blast. Tests under cotton-mill conditions indicate that the new cleaner will remove motey, neppy, and pepper trash even after the test stock has been run through conventional opening and cleaning machines. An adjustable mote knife at the end of the curved plate permits the foreign matter to pass out of the cleaner while the lint remains. Separation is obtained by means of suction which is applied to the lint flue of the cleaner to provide an almost continuous balance of air at the orifice under the mote knife. Mfr: Lummus Cotton Gin Co. (*Textile Industries*, Oct. 1950)

APPARATUS TO PREVENT FLY FROM DEPOSITING ON THE DRIVE MEMBERS OF TEXTILE MACHINES.

A new device prevents the settling of dust and waste on and within the driving heads of textile machines, according to U. S. Patent 2,518,780. It is described as a casing with openings for the passage of power-transmission members and a fan within the casing enclosure. An air filter adjacent to the fan covers the air-inlet opening so that air is drawn through the opening, filtered into the casing under a pressure higher than atmospheric, and then expelled through the shaft openings in order to prevent dust and waste from entering the casing. (Assigned to Joh. Jacob Rieter et Cie, Winterthur, Switzerland)

SLASHER CYLINDER USES LESS STEAM.

A new slasher cylinder uses an internal shell, approximately 3 inches from the regular outer shell of the cylinder, to reduce the amount of steam necessary to dry yarn without any loss in drying efficiency. Only the 3-inch cavity between the two shells need to be filled with steam. Less heat loss through radiation at cylinder ends is also claimed. The total weight of the cylinder is no more than standard cylinders. Mfr: Rigby & Mellor, Ltd., Bury Lancashire, England. (*Textile World*, Oct. 1950)

NEW OPENING MACHINE.

An improved machine of radically new design for opening and fluffing baled cotton to make it clean easier and spin better has been developed at the Southern Regional Research Laboratory in New Orleans, La. The new machine should prove of special value in preparing mechanically harvested cotton for cleaning and processing into yarns and fabrics. An opener of this type large enough to loosen and fluff four bales (about 2000 lbs.) of cotton an hour occupies only about six by eight feet of floor space. Larger machines that will open as much as ten tons of cotton an hour can be built. The new machine has a number of toothed gin-saw or licker-in wire cylinders, arranged one above the other and all rotating in the same direction. The cotton forms a rapidly revolving soft roll as it feeds into the machine on a conveyor belt. Small tufts are pulled out of this roll by the rotating cylinder teeth and are then removed from the teeth by means of a new doffing apparatus with metal blades. This metal doffer is an outstanding feature of the opening machine. It appears to have potential use also in cotton gins and other equipment handling short fibrous materials. (*Textile Bulletin*, Sept. 1950)

SAVE MONEY ON YOUR FREIGHT.

Here is a check list by which the mill can determine whether it is using all possible methods to save money on freight.

(1) Know rate schedules. When the mill buys from a fixed source, it should look into possible savings from rate schedules of various mediums

of transportation. Rate schedules are usually filed with the State Corporation Commission or similar body.

(2) Keep shipments above minimum. In every instance, a 100-lb. shipment can be made for the price of a 50-lb. shipment.

(3) Avoid split delivery from a supplier by asking that complete shipment of individual orders be made on a well-planned freight-charge basis.

(4) Specify the freight handler or company that you know is reliable.

(5) Damages are not profitable. Even with a 100% settlement in your favor, there are inconveniences and expense in doing business with a damage-happy freight handler.

(6) Fight for freight allowances. When competition tightens among suppliers, they will be looking for price advantages that they can offer a mill. Freight allowance is an important one.

(7) Don't absorb freight charges. Far too many firms operate on the basis that freight charges are not a part of the cost.

(8) Use speediest, safest, and most efficient means always. Rapid handling decreases storage costs.

(9) Use parcel post on small items. Ordinarily, a supplier will ship your freight, regardless of size, by whatever medium you have always used. Many small items therefore arrive by motor or other carriers, when they could be more economically shipped by parcel post.

(10) Look for short cuts in unusual instances, or for example, when purchasing from some unusual geographical location. Frequently, some motor company may be found which has a trip to that locality and is faced with a return empty handed, in which case they are usually pleased to obtain expenses for the return trip.

Check freight invoices carefully. Freight clerks usually work under pressure and are no more infallible than the rest of us. When a manufacturer checks over a file of freight bills for one year, he almost always finds one or more worthwhile savings he could have made by discovering the errors in time. (*Natl. Canvas Goods Mfrs.* Rev. Sept. 1950)

FLY-FRAME STOP MOTION.

Automatic stop motion for fly frames which stops frame when end breaks by means of a suction pipe and aspirator connection. Pipe fastens to roller beam, sucks up broken end. Mechanism actuates stop device which shifts belt on loose pulley. (Brit. P. 637 520)

COLORING WITH RESIN-BONDED PIGMENTS.

A reference and review work—the most complete one yet compiled—of resin-bonded pigments in textiles. Pigments were the earliest dyes. Abundant and cheap even now, they were cast aside by the vat dyes which had superior wash fastness. However, pigments had many desirable qualities (fastness to light, resistant to the action of many chemicals, and cheapness) which provoked experiments in the use of binders that would make them useful in textile coloring. Modern binders are synthetic resins which make possible the use of pigments in textile printing or in solid coloring and dyeing. Both methods are carefully outlined; appendix includes a list of synthetic resins and a classification of pigments. (*Calco Tech. Bull.*, 777)

WOOL AND WOOL-LIKE RAYONS.

Fiber length and diameter of wool can be imitated in rayon. Protein added to cellulose base of rayon gives the required wool-dyeing property and increases the warmth. Due to low wet strength & low elasticity, casein fibers usually are only mixed with wool to soften and cheapen the blend. Wool-like fibers from peanuts and soybeans lack the strength of wool. Nylon filament twisted with a wool thread makes the latter far less susceptible to damage in weaving; and the resultant fabric is not inclined to shrink as much as the all-wool counterpart. Nylon staple mixed with wool increased the life of socks, underwear, suits and dresses three-fold without loss in handle or appearance. In handle, warmth, elasticity, nylon approaches or exceeds wool. Wool's most useful property as a clothing fiber surpasses that of nylon: it holds moisture or perspiration without feeling damp. Author forsees a class of regenerated wool fibers. Wool rags and cheaper grades of virgin wool fibers could be dissolved, the keratin molecule could be extruded to form fibers on the same line as rayon. (*Textile Mfr.* Sept. 1950)

WASTE TREATMENT IN TEXTILE PLANTS.

To eliminate pollution in a Forge Village, Mass., discharge stream, 200,000 gallons of scouring waste water per week are treated with 6 to 7% of calcium hypochlorite. After thorough mixing, the sludging is drawn off and treated with sulfuric acid to a pH of approximately 4.5 and then allowed to settle. The resulting clear liquor is decanted to the stream. The sludge is heated and pumped to a blowdown tank and then forced through Sperry Filter presses. The grease recovered from the waste (wool scouring waste)

is sold. If the price of the grease is ten cents a pound and if wools of high grease content are used, the Forge Valley process will pay, according to reports of the New England Industrial Waste Conference held recently at M.I.T.

Component wastes from cotton finishing processes vary in pH from 1.5 to 12.0, and in B. O. D. from 2.0 to 7,000. The combined wastes generally have a pH of 9.0 to 10.0, and a B. O. D. somewhat less than domestic sewage. Many are light enough to require no treatment, but some contain chemicals inhibitory to biological life. The most practical method of treatment is the high-rate biological trickling filter, with or without chemical preneutralization. (*Textile Industries*, Oct. 1950)

NEW FILTER CHANGES AUTOMATICALLY.

An automatic dry-type air filter is designed to clean the air recirculated from spinning and weaving rooms. When lint and dust deposited on the filter causes the resistance to airflow to rise to a predetermined point, a pressure switch closes the circuit to the drive motor. The filter screen then rotates until a sufficient amount of unused, clean filter is exposed to the air flow. Lint and dust removed from the air are rolled up in the used airmat filter for convenient disposal. Mfr: American Air Filter Co., Louisville, Ky. (*Textile World*, Oct. 1950)

RIGHT-HAND FILLING MOTION.

Seconds were reduced from 12% to 4% by means of a right-hand filling stop motion applied to 36-in. E-model plain looms, 40-in. E-model dobby looms, and 40-in. K-model dobby looms at Russell Mfg. Co., Alexander City, Alabama. It was not believed possible—prior to this installation—to apply a right-hand filling stop motion to those looms without sacrificing reed space. This was done successfully by the following procedure:

The right-hand lay end was cut off 1⅝-in. to make room for the filling fork well; the back box was cut to make room for the filling fork rack; the hopper stand was cut off at the base so that the filling fork stand could be installed on the breast beam, thus permitting the filling fork slide to set in line with the filling rack. The top part of the filling-cam follower hub was offset so that the filling-motion fork was in line with the center of the filling-fork slide. The cam follower arm was also offset so that it would operate around the pick-clock drive on the cam shaft. (Gunn, *Textile Industries*, Oct. 1950)

NEW SHUTTLELESS LOOM.

The Ballbe shuttleless loom operates at 110-140 ppm in widths from 63 to 94 in., on gabardines, twills, and various medium-to-heavy cloths. Twelve filling colors can be woven by means of automatic selecting mechanism. Continuous filling supply is from large stationary cones. The loom has a spring-tensioned filling stop motion, a warp-tension indicator, and light signal to indicate warp and filling breaks. Filling breaks are said to be few in number. Less strain on warp thread is claimed. Dobbies or jacquards can be attached. Mfr. agent: J. B. Storey & Co., 36 Spring Gardens, Manchester 2, England. (*Textile Recorder*, Sept. 1950)

MEASURING SHUTTLE TENSION.

A shuttle that has more tension than standard will cause a filling bar. Too much tension also causes warp-wise discolorations in the fabric and shiners that result from variations in light-reflecting properties. Variations in width of the finished fabric and uneven selvages may also be caused by improper shuttle tension. Shuttle tension now is measurable by a special device described by author. Shuttles are tested by methods that indicate both the right-to-left and the left-to-right pick tensions. Tensions on the filling itself may be important: the way the yarn is wound by the winder at the tip, the center, and the bottom of the quill will influence the total tension upon the yarn as it leaves the shuttle during the picking process. Quill tensions are measurable by the new instrument; and suggestions are made regarding the adjustments of tension devices on the shuttles. Instrument made by Saxl Instrument Co., Harvard, Mass. (Saxl, *Textile Industries*, Oct. 1950)

PAD-STEAM DYEING OF NYLON WITH ACID AND DIRECT COLORS.

Acid and direct colors are considered as a single class, since both exhibit maximum affinity for nylon in the presence of acid. Background information is followed by significant conclusions and summary: (1) An improved pad-steam process for dyeing acid colors on nylon piece goods using a solvent, thiourea, ammonium sulfate and gum has been developed. The method has produced dyeings having considerably less warp streakiness than those obtained by conventional procedures. (2) The time of steaming required for fixation of the color varies from ten to fifteen minutes depending on the color. (3) The dyes should be in complete solution in order to prevent specks and warp streaks. For a few colors with poor solubility, an increase in gum concentration improves the dispersion sufficiently to give level dyeings. Also, in some cases, the omission of ammonium sulfate from the pad

liquor is desirable in order to obviate its effect of reducing the solubility of these colors. (4) The fastness properties of pad-steam dyeings are equal to those made by conventional methods.

A large number of different types of nylon fabrics have been dyed in laboratory apparatus adapted to pad-steam dyeing. These materials include tricot knit jersey, light-weight taffetas, satin, continuous filament upholstery and spun nylon upholstery fabrics. The studies were carried out in order to establish the proper conditions for operation of the process: (1) Examination of typical natural gums, starches and synthetic thickening agents proved that the choice of gum is not critical. The gum in the pad-liquor was tested in various concentrations resulting in the selection of 10 parts/100. At this concentration the paddings were more satisfactory, and the levelness was equivalent to that obtained with 50 parts of gum. (2) In a study of steaming conditions the padded fabrics were subjected to neutral and acid steam for various periods of time. A "wet" steam atmosphere, represented by the laboratory pad-steam apparatus, and dry steam, as found in the vat color rapid ager, were evaluated. (3) Many materials were evaluated as solvents for the acid dyes, including inorganic and organic acids (carboxylic and sulfonic acids of the aliphatic and aromatic series), esters, amides, alcohols, glycols, phenols and certain inorganic salts. (*The DuPont Technical Bulletin*, Sept. 1950)

NEW POSITIVELY CONTROLLED TENSION PERMITS CONTINUOUS WARP DYEING AND SLASHING.

Combination dyeing - slashing range prepares denim warps by pigment-dispersion or regular dye-bath method at 25-yd. per min., on new Unistel-Batchelder patented range. The range runs continuously, with no stops for loose ends or doffing. Woods Mfg. Co., Ontario, Canada, believes that a missing end in the weave room can be tied in less expensively than the dyeing range can be stopped. Continuous doffing of loom beam is done quickly, with no stopping of range, and with a loss of only one yard of good dyed yarn. Mfr: Unistel Textile Machinery Corp., Port Chester, N. Y. (*Textile World*, Oct. 1950)

DYEING ORLON AND FIBER V.

Continuous-filament Orlon may be dyed to light shades with selected acetate and basic colors, and by orthodox dyeing procedures carried out at the boil. Fastness properties of these dyes are comparable to those exhibited on other fibers. Special formulas of vat dyes produce fastness to light and wash, but poor fastness to crocking for several uses. Solubilized vat colors produce good fastness properties. Acetate and vat colors can be applied at about 250°F to filament and fiber stock, if under-pressure methods are followed in package machines. Resin-bonding pigments may be used to color Orlon.

Fiber V is dyeable with selected dispersed colors, though the staple is the more easily dyed. Aromatic acids and phenolic compounds are used as dyeing assistants, and the most practical of these appear to be benzoic or salicylic acid. A 2% solution is used in covered-beck dying of staple fabrics, and in covered-jig dying of filament fabrics. Lightfastness is satisfactory except in blue shades, but dispersed dyes generally have good fastness to washing, perspiration, and dry cleaning. Raw stock and yarn may be dyed by dispersed dyes under pressure in package machines at about 250°F. without an assistant. Fiber V can also be colored by resin-bonding pigments and printed with selected dispersed dyes. (*Textile World*, Oct. 1950)

MEASUREMENT OF FABRIC WRINKLING.

Analysis of wrinkle resistance and recovery of fabrics was done by means of a new machine, the Wrinklometer. Mfr: E. I. duPont de Nemours & Co. (*Textile Research J.* Sept. 1950)

ANNUAL REVIEW OF CHEMICAL MATERIALS FOR FIBERS.

This article reviews 1949-50 literature, notes newer fibers, and lists newer chemical treatments of yarns and fabrics. Flame-proofing or fire retarding, mildew or rotproofing, and water repellency were said to be the main efforts to improve the physical properties of natural and synthetic fibers. (*Ind. & Eng. Chemistry*, Oct. 1950)

TITANIUM AS AN AGENT FOR IMPARTING DURABLE FIRE RETARDANCY TO FABRICS.

Various fire-retardant treatments are cited: nondurables that use water-soluble salts, semidurables that employ nitrogenerated phosphates, and durables that are divided into organic and inorganic classes. Organic types use a resin as a binder; inorganic types are the stannates and compounds in the titanium-antimony systems. Fabrics of various weights can be successfully fire-retarded by means of titanium-antimony silicon treatment. The fire-retardant properties of four-ounce sheetings are analyzed. (*Am. Dyestuff Reptr.*, Sept. 4, 1950)

DYEING WOOL STOCK, TOPS, AND YARN.

Vat colors are finding increasing use on wools for uniforms, overcoating, men's wear of good quality, blankets, automotive fabrics, etc. The reason: better fastness to light and washing. However, vat colors are more expensive than normal wool colors, the percentage of dye used is greater, and the danger of damage to the wool (if processing is not well understood) is greater. Lower temperatures and shorter running time, however, are vat-color advantages that save labor and steam, and increase the production per machine. Compared with wool dyed by chrome colors, the wool dyed by vat colors spins better, produces less noils or spinning waste, shows a 10% better tensile strength, and permits finer counts to be spun. The cost difference may be only two or three cents more per yard.

Vat dyes can be applied to wool in all stages of manufacture. Indigo is usually employed on piece goods, but very seldom on raw stock, yarns or slubbing. Wool must be grease-free in order to provide a clean bottom for vat-dye fixation. Otherwise, poor rub fastness and less brightness will result. Carbonized wool is neutralized to a pH approximating that of the dyebath prior to receiving the dye solution. Any excess alkali and hydrosulphite not needed for dissolving the dye are added to the water that makes the dyebath, thus conditioning the wool for the dye solution. Wool dyeing with indigo is highly specialized. Alkali control is obtained by using relatively pure caustic soda, ammonia, etc., and sodium hydrosulphite as a reducing agent. Glue may be added to serve as a leveling agent and to protect the wool from excessive alkali. But too little alkali results in a poorly dissolved dye. Both glue and ammonia help maintain the indigo in fine dispersion for good dyeing.

Continuous indigo dyeing was developed when good dye penetration was hard to obtain from piece-goods dyeing of heavier fabrics (such as 32-oz. kersey) during War II. It took the form of an eight-bowl raw-stock dyeing train that dyed 550 lb. of wool per hour. The train performed the operations of: wetting out, dyeing, oxidizing (hydrogen peroxide solution), rinsing, dyeing, oxidizing, and rinsing. The indigo content of each dye "dip" was 1.2 lb. of paste per gallon; the amount of indigo taken up and deposited was 7%, of which two-thirds was deposited by the first "dip" and one-third by the second. (Textile Industries, Oct. 1950)

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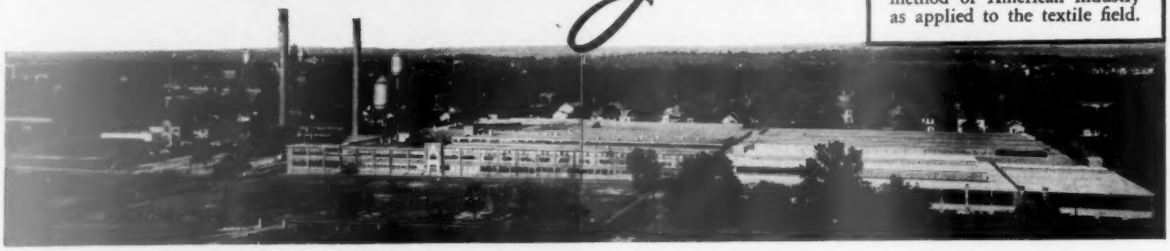

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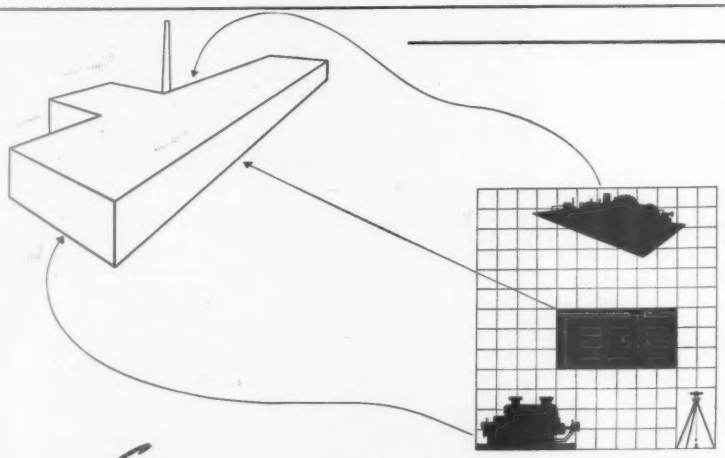

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We get quick reading of all the more important developments and articles from a special section, up front in the magazine. Our executives appreciate this, because we don't buy enough copies of the DIGEST for everyone.

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***You don't have to write this letter, if you're a friend of the DIGEST. Just put your friend's name on this page, tear it out, and mail now. He will even know that our address is: Editor, TEXTILE TECHNOLOGY DIGEST, Institute of Textile Technology, Charlottesville, Virginia.**

TEXTILE TECHNOLOGY DIGEST

VOL. 7 NOVEMBER 1950 NUMBER 11

Abstracts

(An explanation of the classification used in the Digest was published in the January (1949) issue (Vol. 6, No. 1) on the page facing the Index to Authors)

FIBERS A

Natural fibers A 1

Application of punched-card techniques to data on the physical properties of single fibers. Helmut Wakeham & James H. Wakelin. *Textile Research J. 20,* 605-11 (Sept. 1950)

Analysis of data on single cotton fibers is expedited by use of punched-card method. Seven properties of samples were tested; but total of 12 properties were derived by computation of punched-card method. Steps in obtaining results are outlined.

Bonus for wool mills. John McGovern. *DuPont Magazine* 22-23 (Oct-Nov. 1950).

Degreasing of raw wool by the trichlorethylene method suggests the possibility of dyeing in solvents instead of water, and solvent carbonizing to remove vegetable matter that remains after scouring. Final goal may be to process wool without using any water, to obtain finer quality-finished products.

New markets for wool grease may be opened up as more mills substitute the "tri" method which permits the recovery of wool grease. Ninety percent of degreasing at the mill is said to be done by scouring (hot water and soap), and the wool grease goes down the drain.

The "Tri" treatment involves spraying the raw wool with the solvent rather than tumbling, followed by a water rinse to get rid of water-soluble impurities.

California's new cotton shows big improvement. Charles F. Goldthwait & Herbert O. Smith. *Textile World 100,* 127, 310, 312, 314, 316 (Sept. 1950).

New acala 4-42 cotton makes yarn that is 20 to 25% stronger than old P-18-C yarn. Other improvements: fewer neps, improved dyeing and mercerizing.

Comparative ginning tests made at up country ginning factories and at the laboratory. R. L. N. Iyengar, G. G. Oka, and D. L. Sen. *Indian Central Cotton Committee Tech. Lab. B42,* 1-13 (Feb. 1949).

Determination of the lignin content of jute. H. J. Callow. *J. Tex. Inst. 41,* P255-266 (July 1950).

A sulfuric acid method for determining lignin is described. The effects of various temperatures and times of treatment are cited.

Determination of pectic substances in cotton. S. M. Stark, Jr. *Analytical Chemistry,* 1158-60 (Sept. 1950).

Describes a colorimetric method for the estimation of pectic materials in cotton. Method does not require so much time and equipment as former methods.

Effect of heat on wool. H. Zahn. *Textil-Praxis, 5,* 7-10, (1950); *in German.*

Stretch and relaxation of horsehair fibers computed in cold water and under heat. At 94° C. relaxation, after setting at about 70° C., contraction below original length occurred.

Hydroxylysine and lysine in wool. W. R. Middlebrook. *Nature 164,* 321 (Aug. 20, 1949).

A brief note describes development of a relatively simple method for the quantitative estimation of lipine in wool. The method uses a hydrolipate solution containing the equivalent of 5-10 mgm of the original wool.

Improvement of rubber-rayon bond. Jas. W. Illingworth (to Dunlop Tire & Rubber Corp.). USP 2 518 144.

TEXTILE TECHNOLOGY DIGEST is published monthly by the Institute of Textile Technology, Charlottesville, Virginia. In preparing these abstracts, the editorial staff seeks to report correctly the contents of the original papers without reflecting the views of the staff or the members of the Institute. Printed in the U. S. A. Copyright 1950 by the Institute of Textile Technology.

The bond of rubber to rayon is improved by incorporating casein in the rayon.

Influence of fiber ends on the adhesion of bare tire cords. W. James Lyons. *Textile Research J. 20,* 654-56 (Sept. 1950).

100% cotton tire cord had 25% better adhesion to the rubber tire body than 100% rayon-staple cord, when neither were coated with an adhesion-aiding agent. The paper concludes that this superior adhesion quality of cotton was due to surface chemical or structural qualities of the cotton fiber. However, rayon staple cord had 60% better adhesion than filament cord, indicating that the presence of fiber ends (or fuzziness) does improve adhesion.

Method for determining cotton maturity. Anon. *Textile Bull. 76,* 108, 110 (Sept. 1950).

A testing method to determine cotton maturity developed by two University of Tennessee scientists.

Role of the cationic ash of jute fibre in its acid value determination. H. Chatterjee. *J. Tex. Inst. 41,* P 243-248 (July, 1950).

An investigation conducted to prove that it is unnecessary to free defatted Jute fibers from cationi cash previous to silver absorption when determing the acid values of jute is discussed. It was found that to obtain the most accurate results for acid value it is necessary to ensure that the carboxyl groups are in the unneutralized state and are not partly or wholly present as a sodium or other salt. It was also found that the fact that about 70 percent of the ash of raw jute fiber is cationic and portions of the cations with high ash content although inorganic in nature does not interfere with the acid value determination.

Some felting properties of wools of different geographical origins. Arnold M. Sookne, Herman Bogaty, & Milton Harris. *Textile Research J. 20,* 637-42 (Sept. 1950).

Felting behavior of 11 "pure" tops in a shrinkage test showed only small differences. Laundering shrinkage was not affected greatly by wool grade.

Swelling of cotton in water: a microscopical study. Anna T. Moore, Lorraine W. Scott, Ines V. deGruy, and Mary L. Rollins. *Textile Research J. 20,* 620-30 (Sept. 1950).

Describes method for comparing microscopically the cross section areas of the same cotton fiber in wet and dry condition. Change in cross-sectional area of raw cotton fibers was 21 to 34%

of the dry area regardless of cotton variety or fiber maturity.

Textralizing process. Experimenters are applying this new crimping technique to synthetics. *Rayon & Syn. Tex. 31,* 102 (Sept. 1950).

Apparatus for putting a permanent, controllable crimp in carpet wools was developed by Alexander Smith & Sons Carpet Co. Called the "Textralizing" process, the operation makes wool go farther, produces a fuller cover, gives longer wear. Weight reductions of 20 per cent in yarn sizes were made, without noticeable change in texture. Possible use on synthetics now being investigated. Process not being restricted to the Smith Company. Photos, diagram.

Washable wool branding fluids. *Can. Textile J. 67,* 58 (Sept. 15, 1950).

Wool spoiling by sheep-branding materials will soon be a thing of the past, according to this announcement of a new sheep-branding fluid that is completely scourable.

Artificial fibers A 2

Artificial fibers. Von Dr. Arnulf Sippel. *Melliand Textilber 31,* 381-385 (June 1950); *in German.*

The author considers the question of whether another form of comminuting matter than by dividing it up into fiber might not permit the fulfilling in a more economic and practical way the functions of clothing. The various production methods and trends in the manufacture of artificial fibers are discussed; special reference is made to the stretch-spinning and supplementary spinning processes, particularly in the production of acetate rayon. A summary of modern methods of research into the fine structure of fibers is given.

Avisco — two-prong approach. Anon. *Textile World 100,* 100 (Sept. 1950).

Improvement of existing fibers features American Viscose Corp.'s research.

Carbide & Carbon's hopes are on Dynel staple. Anon. *Textile World 100,* 101 (Sept. 1950).

Dynel staple is now being produced in 2, 3, 6, 12, and 24 den. and in lengths from 1½ to 6 in. Static problems have been alleviated in mill processing of Dynel staple by the use of both temporary and permanent anti-static agents. Acid-dyeing, vat and acetate colors may be used on the fiber.

Composition of crotyl cellulose and compatible butadiene copolymer. Wm. H. Charch (to E. I. duPont de Nemours & Co.). USP 2 520 711, Aug. 29, 1950.

An insoluble product obtained by the cross-vulcanization of an unsaturated cellulose derivative such as crotyl cellulose, and an elastomer, such as a butadiene copolymer, is suggested for the production of filaments, films, and fibers.

Celanese emphasis is on research. Anon. *Textile World 100,* 98 (Sept. 1950).

Description of Celanese's research in textile-chemical field.

DuPont Fibers to come. Anon. *Textile World 100,* 94 (Sept. 1950).

The status of Dupont fibers on the 20th anniversary of nylon's discovery: nylon will not be produced in filament form in deniers finer than 15. Nylon-staple production may increase lightly, but continuous-filament yarns will increase substantially. Acetate-staple production will be discontinued by the end of the year, but acetate-filament-yarn capacity is being expanded. Similarly, viscose production is growing. Continuous-filament Orlon is being produced now as 200/80 yarn. Later, 100/40, 400/160, and 75/30 yarns will be produced. Staple Orlon (coming in 1952) will be produced in quantity and in dyeable form. Small quantities of Fiber V (a condensation polymer of high tensile streength, resistance to stretching, abrasion, and wrinkling, etc.,) are produced now. Fiber D, Fiber E, and Fiber G are other new Dupont fibers.

Here's what is happening in synthetic staple. H. R. Mauersberger. *Rayon & Syn. Tex. 31,* 74-79 (Sept. 1950).

Staple-fiber deniers, lengths, luster, and crimp are tabulated for all fiber manufacturers. Author shows the spinning system used by each fiber. The new DYNEL staple-fiber is included. Viscose, acetate, and nylon tow are tabulated.

How a new fiber is developed. Anon. *Textile World 100,* 97 (Sept. 1950).

A pictorial review of the development of nylon.

How to identify synthetic fibers by their x-ray diagram. Dr. A. N. J. Heyn. *Rayon & Syn. Tex. 31,* 39-43, (Sept. 1950).

X-ray patterns of synthetic fibers are discussed. Fortisan, Fiber G. Viscose, Cordura, and others are presented.

Hydroxly-containing polymers. Robt. M. Joyce, Jr. (to E. I. duPont de Nemours & Co.). USP 2 518 440, Aug. 15, 1950.

Water-soluble hydrolyzed polymeric vinylethylene carbonate is suggested for the making of films and filaments.

Mitteilungen (reports) reprints of scientific articles on research into the properties of synthetic fibers. Textilforschungsanstalt Krefeld E. V., Crefeld, Ger. *Bibl. of Technical Reports, 14,* 156-7 (Sept. 15, 1950); *in German.*

Needed: more good garnetted fibers. John H. Senior. *Rayon & Syn. Tex. 31,* 100-101 (Sept. 1950).

Experience in the use of garnetted stocks from rayon, acetate, nylon and other synthetic fibers is reviewed. The plant built by West Point Mfg. Co. at Fairfax, Ala., is said to have improved the handling of viscose waste materials.

New method for determining nylon in blended mixtures. J. Lanczer, *Textile-Rundschau, 5,* 92-4, (1950); *in German.*

In an alkaline Naphtol As solution (described by the article in detail), nylon dies pink with Turkey-red oil, etc., cellulose is undyed. Another method: fiber is boiled with Naphtol AS and washed in solution of AcOH, then washed and dried. Nylon flouresces; cellulose does not.

"Orlon" — duPont's latest. D. M. Thornton *Bobbin & Beaker 8,* 10, 38, 40 (Spring, 1950).

"Orlon" continuous filaments in deniers of 100, 200, and 400 are being produced at Camden (S. C.) plant. Denier per filament: 2.5.

Pacific converters. Robert C. Wilkie. *Am. Wool Cotton Reptr. 64,* 11-13, 18 (Sept. 28, 1950).

The Pacific converter is a machine that converts any continuous textile filament into silver of predetermined length in a single operation. The sequence of conversion stages includes cutting action, debonding, drafting, shuffling, second drafting and shuffling, third and final drafting, collection into sliver, and crimping. Features of the converter and other pertinent information are discussed.

Production of synthetic booming again in 1950. Richard C. Scott. *Textile World 100,* 89-91 (Sept. 1950).

Relative fiber position in U. S.-percent-of-consumption figures are shown, along with the 1950 capacities of three important synthetic producers, net-sales figures from American producers, U.

S. production by synthetic type, comparative prices, import and exports, and world production statistics.

Questions and answers about Vinyon HH staple. Howard E. Shearer. *Textile World, 100,* 100-102, 224, 226, 228 (Oct. 1950).

Properties of Vinyon HH staple are described. Vinyon HH retains strength when wet. It softens, shrinks, and bonds to other fibers under pressure and in the presence of heat and solvents. It elongates under stress and contracts under heat, and has other unusual characteristics that make it useful for special yarns or fabrics. Tables.

SRRL fibers grow from farm products. Anon. *Textile World 100,* 102 (Sept. 1950).

Description of peanut protein fiber, various soluble fibers, and cottonseed protein fiber as developed by the Southern Regional Research Laboratory, of the USDA, at New Orleans.

Synthetic fibers—new and improved. C. W. Bendigo. *Textile World 100,* 92-93 (Sept. 1950).

New domestic and foreign fibers are reviewed.

Synthetics. Richard C. Scott. *Textile World 100,* 89-105 (Sept. 1950).

The production figures for synthetic filaments, fibers and yarns are recorded. Projects being carried out by various companies are briefly discussed.

Synthetics on threshold of important developments. Anon. *Am. Wool Cotton Reptr. 64,* 25, 27, 125-7 (Sept. 21, 1950).

The characteristics of synthetic fibers and yarns which will be employed in combination with those yarns and fibers now available to make possible different and better effects in fabrics are discussed.

Wool and wool-like rayons. A. Johnson. *Textile Mfr. 76,* 418-20 (Sept. 1950). See front section.

Yarn production B

Fiber preparation B 1

Better fiber blending with garnett cross feed. E. H. Helliwell. *Textile World 100,* 141 (October, 1950).

A new feeder for garnett stock blends and cards fiber in one operation. The so-called cross feeder increases flexibility of processing at Abrants Garnetting Co., Woonsocket, R. I.

Blending synthetic fibers. Allen Anderson. *Textile Industries 114,* 108-110 (Oct. 1950).

An efficient system for blending fibers for one-process picking is described. Opener line includes: supply feeder, opener, and Lummus bale-mixing feeder which builds up a 20-layer sandwich mix for the picker. The unit has a production of 350 lb. per hr. The cylinder beater of the opener operates at about 1000 rpm and is provided with 150 arms, so that every minute over 150,000 tiny bits of stock are whipped off the sheet of supply stock and thrown against the double screens. Tinting is done at the point where the opener delivers to the bale-mixing feeder. The latter unit may be regulated to feed out a small percentage of the stock, so that most of the stock (about 95% as described in the example given by the author) is kicked back and therefore recirculated through the machine. With a constant replacement from the supply feeder and opener, a continuous sandwich mix is built up in the bale-mixing feeder, with an average of about 20 layers of stock in the sandwich.

Humidifiers in opener room and other processes. Anon. *Textile Industries 114,* 114 (Oct. 1950).

Less gear changing on drawing frames to regulate sliver weight resulted from the installation of humidifiers in the opening room of Covington Mills, Covington, Ga. Covington's objective was to feed the same amount of stock and the same percentage of moisture so that weights would be more accurate. The mill found by experiment that the weight of a sample of cotton in an unhumidified opener room varied from 35 to 47 grains. Sample was weighed every hour (8 hours per day) for two weeks.

Lummus Super-jet cleaner. Anon. *Textile Industries 114,* 184 (Oct. 1950). See front section.

New dust collector. *Can. Textile J. 67,* 26, (Sept. 15, 1950).

The new Vokes' dust collector has an assembly of slightly elliptical wire mesh frames over which the filter medium in the form of a number of fabric envelopes is stretched. Frames carry cleaning mechanism. Mfr: Vokes Ltd., Toronto, Ont.

Opening and cleaning of fibrous materials. Thos. W. Owen (to The British Cotton Industry Research Assn.). USP 2 518 713, Aug. 15, 1950.

A machine for opening and cleaning fibrous materials, comprising a casing, a partition disposed

in the casing and substantally dividing the same into a beating compartment and a hopper compartment, the partition having an aperture affording limited inter-communication between the compartments, a spiked lattice disposed in sloping position in the hopper compartment for carrying fibrous material upward to the aperture in the partition, an evener roller mounted for rotation in the hopper compartment above the upper end of the lattice in position to remove surplus material from the lattice thereby to determine the thickness of material carried forward on the lattice, a rotary stripper disposed in the casing above the lattice and adjacent the evener roller in position to return the surplus material to the lattice, and a rotatable beater and dirt bars cooperating therewith disposed in the beating compartment in position to receive material from the spiked lattice through the aperture, the rotary stripper comprising a rotary suction cage having stripping members mounted on its periphery, the organization being such that dust liberated from the fibrous material by the combined action of the evener roller and the stripper members is removed by the suction cage at the region of such liberation.

Southern Regional Research Lab's opener. Anon. *Textile Bull. 76*, 99-100, 101 (Sept. 1950).

An improved machine of radically new design for opening and fluffing baled cotton to make it clean easier and spin better has been developed at the Southern Regional Research Laboratory in New Orleans, La. The new machine should prove of special value in preparing mechanically harvested cotton for cleaning and processing into yarns and fabrics. An opener of this type large enough to loosen and fluff four bales (about 2000 lbs.) of cotton an hour occupies only about six by eight feet of floor space. Larger machines that will open as much as ten tons of cotton an hour can be built. The new machine has a number of toothed gin-saw or licker-in wire cylinders, arranged one above the other and all rotating in the same direction. The cotton forms a rapidly revolving soft roll as it feeds into the machine on a conveyor belt. Small tufts are pulled out of this roll by the rotating cylinder teeth and are then removed from the teeth by means of a new doffing apparatus with metal blades. This metal doffer is an outstanding feature of the opening machine. It appears to have potential use also in cotton gins and other equipment handling short fibrous materials.

Streamlined fibre blending. Wm. F. Leineweber, Jr., *Textile Mecury & Argus, 123*, 343,345,347 (Sept. 1, 1950).

One of the simplest methods of blending is the Fiber Meter Automatic Blending System developed by the Houdaille-Hershey Corp. in conjunction with the Marion Manufacturing Co. and Textile Equipment Corp. The stock is automatically and accurately weighed (in small increments), automatically sandwiched, and then blended all in one continuous operation and within an extremely compact space. All that is required of the operator is to keep the automatic weighing feeders, the fiber meters, loaded. Even if he fails to do this, the system will be rendered inoperative since each fiber meter must have its required weight of fibres before tripping. The system consists of the automatic weighing feeders, the fiber meters (one for each type fiber), a conveying arrangement to carry the stock from these machines to an automatic holding chamber (where it is sandwiched) and a blending machine to do the actual mixing. From there, it goes directly to the picker.

Carding and combing B 2

Apparatus for winding yarns on cards. Mario Nava. Can. P. 468 304, Sept. 26, 1950.

Apparatus for winding a plurality of equal lengths of thread side-by-side on a flat card comprising a card-supporting plate mounted at one end in a spindle and unsupported at the other end, manually operable gearing for rotating the spindle, and automatically operative mechanism for stopping movement of the gearing at each rotation.

Doffer roll for carding machines. Ernest L. Cady (to E. L. Cady Eng. Co.). USP 2 523 751, Sept. 26, 1950.

A doffer roll comprising in combination, a plurality of rings having card clothing thereon, a plurality of rings mounting members interposed between the rows of needles of the card clothing, supporting means for the 2 groups of rings upon parallel axes, bearings for each group of rings at opposite ends of the roll, the bearings having adjustments for varying the amount of separation of the axes, and means to simultaneously rotate the rings.

Electronic measurement of silver, roving, and yarn irregularity, with special reference to the use of the Fielden bridge circuit. P. H. Walker. *J. Tex. Inst. 41*, 446-466 (July 1950).

The development of an ac. bridge circuit into a

new form of irregularity tester is described. Additional information is also given concerning the operation of the apparatus and the scope and accuracy of the results so obtained. Typical readings are illustrated and their adaptability for analysis discussed.

Mill performance charts. Anon. *Textile Industries 114*, 100-105 (Oct. 1950).

Operation performance charts keep the quality-conscious Russell Mfg. Co. fully informed on production and quality factors. Charts kept of the number of neps at the card resulted in improvement; Fibrograph was used by the mill to check changes in staple length of cotton during processing. In one series of tests, the staple was increased during processing, measuring as much as 5/32 in. longer than the bale form; the cause of this change was not explained (i. e., whether this was combed stock, etc.). However, by revealing the change, the mill was able to prevent trouble by opening the rolls of roving frames for the longer staple. Samples of mill-developed performance and control charts are shown: picker lap (% variation); card sliver (% variation); spinning ends down, yarn defects, etc. Mill developed unique yarn inspecting machine which permits inspection of 16-20 bobbins of yarn simultaneously. Procedure for making nep counts described by pictures.

Tips on processing cotton waste. Henry Paul. *Textile Industries 114*, 125-127 (Oct. 1950).

When feeding a 50-50 mix of strips and low-grade cotton, strips are fed into certain hoppers, and cotton is fed into other hoppers. Otherwise, an uneven feeding will be obtained, resulting in the lighter of the two stocks feeding out ahead of the heavier stock. Picker hoppers are opened as far as possible in order to produce a heavy feed. since waste stocks do not feed as heavily as good cotton. Beater speeds and grid-bar settings are modified in order to allow less trash removal. Higher humidity in the picker room is maintained not only to make the stock run better but also to reduce the possibility of damaging fire. Waste boxes are cleaned out more often; cleaning generally is done more often; beaters and grid bars are inspected more often for dullness and improper alignment.

Dust and fly in the card room is generally controlled by the addition of oil in the openers; card settings are opened wider, especially flats and doffer settings; stripping occurs twice as often; higher humidity, and reduction of tension on the

web between the doffer and front calendar roll may be necessary. Hand stripping of cylinders and doffers is necessary every 24 hours. Heavier card clothing and heavier sliver weights may also be required.

On drawing, speeds are reduced 10%, roll settings are set closer, and tensions are decreased about 20%. On roving frames, twist usually is increased 20%; tension is reduced; cleaning is more frequent; and more taper is put on the bobbins to prevent tangled ends when tension becomes too slack.

Wool card rub apron. Henry M. Bacon (to The Dayton Rubber Co.) USP 2 520 192, Aug. 29, 1950.

An apron for textile processing comprising a flexible inner fabric base, a body of flexible rubber composition adjacent the base co-extensive therewith and extending to the edges thereof, a plurality of retaining buttons on the inner surface of the base, a plurality of inserts of high tear resistant and relatively inflexible material spaced along and adjacent both edges of the apron incorporated in the body thereof, and means extending through the inserts for fastening the buttons thereto.

Drafting and roving B 3

The American system. Harold T. Heathcote. *Textile Age 14*, 50-3 (Sept. 1950).

In an address given before the New York State Textile Overseers Association, the improved potentialities and recommended practices for processing worsted yarns on the American system are discussed.

Anglo-continental drawing. Anon. *Fibres 11*, 315-317 (Sept. 1950).

The principles of drawing on the Anglo-Continental system are cited and the drawing box used is described.

Automatic roll-beam cleaner for roving frams. Anon. *Textile Industries 114*, 151-152 (Oct. 1950).

Mill man takes power from top-comb shaft of roving frame and drives automatic roll-beam cleaner. A 25-tooth bevel gear is attached to the shaft, meshed with another 25-tooth bevel gear on a stud which carries a 17-tooth bevel gear. The latter gear drives a 35-tooth bevel gear which is attached to the same stud as a rope-driving pulley. The pulley drives an endless rope to which a square of clearer cloth has been attached.

Cleaning is done by the clearer cloth as it passes under the rolls and over the roll beam of the frame.

Causes of irregularity in worsted drawing and spinning. Dr. R. Cox & J. Ingham. *J. Textile Inst. 41*, 376-402 (July, 1950).

Yarn irregularity is considered in terms of the processing of botany quality wools into the high-count yarns used in such fabrics as panamas and pick and pick designs with contrasting colors. Factors affecting the characteristics of yarn are reviewed. Methods of measuring irregularities, drafting and fiber control, doubling and the effects of drafting are described. Experimental work on the variability of weight per unit length includes data on top variability and normal versus shortened drawing.

Fly-frame stop motion. Le Blan et Cie, 13 Rue Faidherbe, Lille (Nord) France. (Brit. P. 637 520). See front section.

New French system cuts costs, ups production. Victor Saxl. *Textile World 100*, 110-111, 220 (Oct. 1950).

Porcupine drawing frames are being replaced to some extent by gill boxes, leading to modifications in French spinning systems for worsted. Long draft spinning and other improvements permit: spinning of yarns up to 27s in 5 or 6 operations; yarns up to 36s in 6 or 7 operations; and those above 40s in 7 to 8 operations.

New lay gear formula gives more accurate results. J. F. Bogdan. *Textile World 100*, 135, 137, 230, 232 (Oct. 1950).

So long as the change in roving number is small, the old square-root method calculates the lay gear required for a new hank roving satisfactorily. However, it assumes that the densities of the two rovings are the same, and for coarse rovings, it does not give practical results. A better approximation of required gear may be obtained by the following: required gear=gear on frame x (hank roving on frame ÷ hank roving)$^{0.662}$ Article shows how the formula was devised.

Posting reworkable waste brings reduction. Anon. *Textile Industries 114*, 116 (Oct. 1950).

Methods engineer worked out a general, department-wide posting sheet of reworkable waste made by each employee during one week. Posting of this information in the mill resulted in reduction of reworkable waste of 20%.

Review of methods of measuring the irregularity

of flax roves and yarns. J. Matthew, N. B. Rajchenbaum & J. L. Spencer-Smith. *J. Tex. Inst. 41*, 486-502 (Jully 1950).

Methods for measuring and expressing the irregularity of flax slivers, roves and yarns, and the general requirements of irregularity testers for both routine and research purposes are discussed. Integrators for evaluating the percentage coefficient of variation for each of four types of testers, a complete bibliography on methods measuring the irregularity of yarns and slivers and a method of expressing test results are all desired.

Study of the irregularities of French drawn rovings and yarns. P. P. Townend & T. S. Chow. *J. Tex. Inst. 41*, 403-415 (July 1950).

An investigation to evaluate the effect of doublings, drafting and number of operations on the regularity of rovings and yarns produced on the Continental system is described. A 64s top was converted to a series of rovings by eleven schemes using different doublings, draft and number of operation. The roving was then spun to 30s worsted count. It is shown as a result of this work that in order to obtain regular rovings and yarns, at least two doublings must be used at each operation and the draft must be low. It is also concluded that the most suitable means of reducing the work in going from roving to yarns is to seek improvement in the mechanical control of drafting.

Textile drafting apparatus. Edward J. Abbott (to Abbott Machine Co.) USP 2 522 332, Sept. 12, 1950.

In apparatus arranged to draft a textile sliver, front and back sets of drafting elements each adapted to grip the sliver at least a line of contact and driven so as to establish a draft of the sliver between the sets, and means between the sets for confining the sliver being drafted, the confining means comprising a rotatable member having an end surface positioned to engage the sliver approximately in a plane which is approximately parallel to the line of contact of the front set of drafting elements, the surface being rotatable about an axis which is approximately perpendicular thereto and which is offset from the line of travel of the sliver, the surface having components of motion in a forward direction along the line of travel of the sliver, and a further member positioned to press the sliver against the end surface, the two members being mounted in opposition to engage the sliver betwen them.

Spinning B 4

Anti-friction spindle easy to adjust and plumb. Anon. *Textile World 100*, 137 (Sept. 1950).

The "Century" anti-friction spindle has a plumbing feature that makes it easy to check and adjust without stopping the frame and without loss of production time. The all-steel base is packed with grease and contains two ball bearings. Mfr: H & L American Machine Co., Pawtucket, R. I.

Causes of the irregularity of cotton yarns. G. A. R. Foster. *J. Textile Inst. 41*, 357-375 (July, 1950).

The importance of the cause of cotton-yarn irregularities is estimated. Photographic traces are shown of sliver, roving, and yarn. Raw-material properties, shortcomings of processing machinery, and external causes of yarn irregularity are discussed. The paper concludes that "the irregularities in a cotton yarn prepared on machinery in good mechanical condition are thus mostly made up of drafting waves introduced at the spinning and speeder frames. The short wave put in at the spinning frame is of much higher amplitude than the others, that from the roving frame is longer and of smaller amplitude; and there are still longer and smaller waves from the intermediate, slubber, and draw frames, the effect of doubling at the speeder and spinning frames is usually to reduce the amplitudes of the longer waves and to increase those of the shorter ones. In coarse yarns the irregularity due to random fiber arrangements is small, but in fine yarns it becomes comparable with the drafting waves. Its main effect is to add to the short-range irregularity of the yarn."

Check empty-bobbin sizes to reduce traveler drag. E. H. Helliwell. *Textile World 100*, 135, 308, 310 (Sept. 1950).

Size of empty bobbins affects yarn tension; and increasing angle of yarn pull reduces end breakage, two important factors in new worsted spinning and twisting that are characterized by large 5-inch rings and high spindle speeds. Tables of sines and approximate angles of traveler pull.

Effect of break draft on yarn strength. Anon. *Textile Industries 114*, 159-160 (Oct. 1950).

Two contributors answer the question whether break draft on either slubbers or spinning frames will affect a mill's yarn break when the mill changes from .85 to .50 h.r. for producing 6s, 7s and 8s yarn. 1) Break draft on Casablancas spinning does affect yarn strength, but the slubber break draft is less critical than the spinning. Break draft is tied in with total spinning draft; the higher the total draft, the larger the break draft should be. A part doff is suggested for each of the following roving-frame break drafts: 1.01, 1.25, 1.50, and 1.75. Each of the doffs are spun with a spinning break draft of 1.375. Tests are made for strength and uniformity, and the results are plotted on rectangular coordinates. The points for strength and uniformity are connected by two smooth curves. If the peaks of the curves coincide, read off the best break draft. If they do not coincide, read the peak at the mean of the two points. Then, using a full doff of roving with the selected break factor, a part doff is made on the spinning frame with spinning break factors of 1.20, 1.40, 1.60, and 1.80. These doffs are again tested for strength and uniformity; the results are plotted as before; and the spinning break draft indicated by the highest strength and uniformity is selected as the best break draft for regular production use.

2) Another mill man writes: hank-roving break draft will have less effect on yarn strength during a change from .85 to .50 slubber roving than other factors of manufacturing. Break drafts are usually fixed by the machinery builders for a range of total drafts and stock weights. If within these ranges and limits, and provided roll settings, twists, speeds, and tensions are correct, the mill will produce good quality. As far as the present contemplated change is concerned, good roving will be produced within the range of 3.00-4.75 draft. In spinning single-creel roving of the hank specified, a draft of not more than 13.50 should be preferred. Drafts over that amount will definitely affect the yarn strength more than the break draft, but possibly not enough to cause yarn rejections.

Light-weight pneumatic roller picker. Anon. *Textile Mfr. 76*, 429 (Sept. 1950).

Air-operated roller picker weighs only 8 oz., is 6 inches long; cleaned 18 ring-spinning frames (with Casablancas draft system) in 2 hours. Mfr: Desouter Bros., Ltd., The Hyde, Hendon, London, N. W. 9.

Modern high drafting system for cotton and staple fibre. *Textil-Praxis*, 10-13 (1950); *in English-Spanish.*

Recommends less break draft for staple fibers than for cotton. For European mills which use mostly self-weighted top rolls, the article advises

the use of saddle-weighted rolls, and points out a method of converting the frames.

New perfect ring spinning frame. Anon. *Textil-Praxis,* 7-9 (1950); *in English-Spanish.*

A stationary ring rail to moderate ballooning and yarn-tension fluctuations is the feature of the Perfect ring-spinning frame. The frame has positively driven spindles, and squirrel-cage motor driver for each side of the frame. Mfr. Schiess Aktiengesellschaft, Dusseldorf, Germany.

New spinning frame builds 16-oz. package of 20s yarn, at 9,000 spindle rpm.

(Condensed from Device and Process for Twisting and Spinning, USP 2,473,520, by E. C. Gwaltney and assigned to Saco-Lowell Shops). See front section for a complete report of this patent.

Packing cutter for mule spindles. Elliott E. Bradish (½ to Raymond H. Roberts). USP 2 523 859, Sept. 26, 1950.

A packing cutter for a spindle of a textile machine comprising a device adapted to be mounted on the spindle and to receive convolutions of strandular material which forms packing, a knife adapted to be mounted on the spindle, and means to bring about such relative motion between the device and the knife as to cause the knife to cut through the packing.

Reclaiming filling bobbins. Anon. *Textile Industries 114,* 153-154 (Oct. 1950).

One side of an old reeling machine was equipped with filling-bobbin clips from old shuttles. Clips were spaced 4 in. apart along the full length of the reel. As the reel turned slowly, the ends of soiled and tangled filling bobbins were thrown over the surface of the reel. The ends caught and were wound off. Strings were tied around the reeled-off yarn; the yarn was then cut away.

Spindle-oiling machine carries its own power. Anon. *Textile World 100,* 140 (Sept. 1950).

A new self-contained spindle oiler is described which carries its own power and can be operated independent of all power lines and hoses, and which has a seat for the oiler to ride on. Operator propels himself with feet, uses right-hand thumb to press oil-releasing lever. Mfr: Brown Dynalube Co., Box 86, Charlotte, N. C.

Spinning machinery. Hans Carl Bechtler (to Pneumafil Corp.) USP 2 522 250 Sept. 12, 1950.

In combination with a spinning frame including drawing rolls, a suction nozzle placed adjacent

the leaving side of the rolls for effecting exhaust and trapping of dust, lint, and broken yarn, a collecting duct, a flexible joint connecting the nozzle to the duct and means for holding the nozzle in normal position adjacent the leaving side of the rolls, the means including a stop member and a flexible member adapted to snap into contact with the stop member to hold the nozzle in normal position adjacent the leaving side of the rolls, disengagement of the flexible member from the stop member permitting the nozzle to be moved to a point remote from the rolls whereby working room is provided for efficient piecing of a broken yarn caught by the nozzle with the spindle end of the broken yarn.

Traveller for ring twisters. Herbert J. Potts (to Alexander Smith & Sons Carpet Co.). USP 2 520 471, Aug. 29, 1950.

A spinning or twisting frame for yarn comprising a rotating spindle, a traveller ring disposed thereabout, and a traveller riding on the ring, the traveller having upper and lower flanges disposed to guide the same on the ring, and fins disposed on the upper and lower flanges and extending in a direction transverse to the direction of movement of the traveller around the ring to introduce air resistance to the movement thereof.

Yarn or thread twister. Gilbert H. Snider. USP 2 523 338, Sept. 26, 1950.

A false twisting device, comprising a pair of discs, each having a slightly conical face, and annular member of soft matte material secured to each conical face and covering the peripheral portions thereof with the outer surface forming a relatively narrow thread engaging surface spaced outwardly from the conical face to preclude contact between the conical face and strands engaged by the member surface, means rotatably supporting the discs with their conical faces toward each other, the discs being disposed on angularly arranged axes to position a radial portion of their conical faces in parallelism and with the strand engaging surfaces of their respective annular members closely spaced to oppositely engage threads or strands therebetween, means diametrically adjacent the peripheries of the discs and aligned with the radially parallel faces for guiding a plurality of strands diametrically between the angularly spaced peripheral portions of the discs and the twisted thread from the parallelly adjacent peripheral portions of the discs with the strands passing between the closely spaced parallel surfaces of the annular members,

and means for driving the discs in opposite directions and at substantially the same rate of speed to twist the strands into yarn or thread.

Winding and spooling B 5

Bunch building mechanism for bobbin winding machines. Russell P. Drake (to Barber Colman Co.). USP 2 520 134, Aug. 29, 1950.

In a bobbin winding machine, means rotatably supporting a bobbin to be wound, a slide reciprocable longitudinally of the bobbin, a main traversing device on the slide, means for advancing the slide to carry the device from a retracted position rearwardly of the bobbin into operative association with a running strand leading to the bobbin, an auxiliary yarn traversing guide mounted for reciprocation in a direction axially of the bobbin and adjacent thereto, and actuating means conditioned by the position of the slide and operative in such advancing movement to impart a reciprocatory movement to the guide.

Device for use in winding threads. Cornelius G. Jansen, Derk J. E. Nijkamp & Otto A. H. Waters (to Am. Enka Corp.). USP 2 520 409, Aug. 29, 1950.

An assembly for use in preventing tangling during the overhead unwinding of crepe thread comprising a vertically mounted sub-assembly including a roller mounted for rotation about a vertical axis and adapted to be driven by frictional contact with the moving thread and a thread guide in substantially parallel spaced relation to the axis of the roller, the guide having a plurality of axially spaced grooves and eyelets therein, means constituting a part of the assembly defining a pair of eyelets in the thread path leading to the sub-assembly one of the eyelets lying on one side of the roller and means also constituting a part of the assembly defining an eyelet in the thread path leading from the sub-assembly whereby, depending upon the direction of twist of the thread, it may be led first through one or the other of the eyelets in the thread path leading to th sub-assembly then in a generally helical path on or more times about the roller and through the eyelet in the thread path leading from the sub-assembly.

Here's how to up Barber-Colman spooler production. Henry P. Lynch. *Textile World 100*, 129, 212, 214, 216 (Oct. 1950).

Methods of calculating machine, winding, and operator efficiency are reviewed.

Mounting for yarn packages. Hugo F. Liedtke (to Smith, Drum & Co.) USP 2 524 629, Oct. 3, 1950.

A mounting for yarn packages wound upon a perforated tube, comprising a spindle arranged to pass axially within the tube, and expansible means open at one end to fit over an end of the tube and attached at the other end to an end of the spindle to be normally under compression to seal the end of the tube, the means being maintained under the compression throughout the expansion range of the spindle, whereby the sealing means function to prevent leakage through the end of the tube incident to spindle expansion.

Winding machine control systems. Ingham S. Roberts (to Am. Viscose Corp.). Can. P. 468 165, Sept. 19, 1950.

In combination, means for continuously supplying a material of indefinite length, take-up means for winding the material into a package, an electric motor having a variable speed characteristic and having at least one exciting winding for driving the take-up means whereby a change in current through the winding is accompanied by a change in speed of the motor, a reactance coil in series with an alternating current supply line for controlling the current fed to the exciting winding of the motor, an element in a loop of the material and pulling against the loop whereby it is movable by the material in response to any variation of the tension in the material resulting from any change of linear speed of the material, a magnetic core connected to the element and movable axially with respect to the coil in response to movements of the element whereby a change of tension changes the positional relationship existing between the core and the coil thereby changing the reactance of the coil and the amount of current passing through the motor winding and the coil which thereby varies the speed of the motor and the force exerted on the core by the coil, and means for superimposing an additional force, varying in respect to change of element position, on the element for providing a predetermined control of tension on the material throughout the take-up and maintaining the take-up speed of the material substantially equal to the material supply speed.

Yarn processing B 6

American system-the new textile process for all long fibers. Anon. *Whitin Review, 17*, 13-16 (July-Aug. 1950.)

The demand for blended yarns from machines that would process longer staple fiber led to the development of the American System. Fiber-control devices and other changes permitted the system to process 100 per cent worsted yarns. A draft of 25 on roving and 15 on spinning is possible for worsted on the American System. Three-process drawing, pin-drafting, or gilling precedes Whitin Super-draft roving and long-draft spinning. Tops must be within 25 per cent limits in inch-to-inch variation and contain not more than 3 per cent oil. 55 to 60 per cent R.H. recommended.

Some causes of woolen yarn irregularities. G. H. Thorndike. *J. Tex. Inst. 41,* 416-432 (July 1950).

Some of the different factors which are likely to cause variation in the levelness of woolen yarns are discussed with particular reference to those arising from carding mechanisms. Techniques for estimating the magnitude of these effects are described and typical results are included.

Woolen and worsted spinning. R. S. Audley. *Fibres 11,* 311-314 (Sept. 1950).

In this the second of a series of articles on woolen and worsted spinning (Part I—*Fibres,* Aug. 1950) recent developments in spinning equipment are described.

Worsted yarn manufacture. Avoidance of mixes. Anon. *Fibers 11,* 318-319 (Sept. 1950).

Causes for and methods of avoiding mixes are given.

Yarn testing — B 10

A review of the causes of yarn irregularity. J. G. Martindale. *J. Textile Inst. 41,* 340-355 (July 1950).

Woolen yarn irregularities up to and including the process of spinning are reviewed. Yarn uniformity is increased by storage of rovings. Shortcomings of machinery produce theory that irregularity of roving comes in regular intervals. Thus, the wave-length theory. Waves produced in spinning are the most prominent of all, and are responsible for a good deal of the short-term variation in yarn. Irregularity of a strand buildup of fibers arranged at random is expressed by formula. Humidity and other factors of control, and many causes of yarn irregularity are discussed.

Comparison of some methods of measuring yarn irregularity. W. J. Onion, J. Pickering, & W. Stables. *J. Tex. Inst. 41,* 480-485 (July 1950).

A new type of photometer which can be used for measuring wool yarn irregularity is described. Results obtained by use of the photometer are correlated with changes in weight per unit length with rather good results. The authors consider the instrument sturdy, easily used and readily adaptable for routine mill testing.

Electronic device measures yarn and sliver uniformity. Anon. *Textile World 100,* 148 (Oct. 1950).

A new yarn and sliver uniformity tester is made available by Fielden Instrument, Philadelphia. The machine uses a dielectric comparator to test yarns up to 250s cotton count. Continuous record of variations is shown on cathode-ray oscillograph or pen recorder.

Importance of regularity in linen yarns. T. Bleakley. *J. Tex. Inst. 41,* 526-532 (July 1950).

The importance of obtaining regularity in linen yarns whether by mechanical or other means is discussed.

Minimum breaking strength and assessment of yarn irregularity. H. P. Short. *J. Tex. Inst. 41,* 433-444 (July 1950).

The relationship between the incidence of breaks under a given tension and the breaking strength characteristics of a yarn is established. Having established this relationship the minimum strength of a yarn is assessed either from practical measurements of the breakage rate with tension or by calculation from breaking strength characteristics.

Quality-control men say, "We're out of the dark." W. A. Thomason, Jr. *Textile World, 100,* 94-5 210, 212 (Oct. 1950).

Quality-control men from several mills show that laboratory built around a good evenness tester can: (1) determine best manufacturing conditions (speeds, processes, settings, etc.) for yarns; (2) determine the frequency of yarn defects, and by measuring the distance between defects, identify the process or machine causing the defects; (3) evaluate the quality performance of new machinery or supplies.

Silk yarns: some inherent and processing irregularities. V. Castle. *J. Tex. Inst. 41,* 534-546 (July 1950).

This paper discusses the effects of soaking, degumming, lousiness and weighting on the regularity of silk yarns.

Vitno-integrator—Its construction and application for measuring the levelness of yarns. F. H. Germans. *J. Tex. Inst. 41*, 467-479 (July 1950).

A description of an electrostatic integrator for measuring the sum or the integral of statistically important numbers or functions is given. This instrument is also capable of measuring other quantities than the sums and sums of squares, but only these two measurements are discussed because they are needed for calculation of standard deviation.

Yarn preparation C 1

Automatic creel mover and tension control improve worsted warping. Anon. *Textile World 100*, 146 (Oct. 1950).

Constant tension on worsted warp sections is now possible by means of an automatic mover installed on the Holt Creel, as announced by George Hattersley & Sons, Ltd., Keighley, England.

Automatic filling winder. *Textil-Praxis*, 27-29 (1950); *in English-Spanish.* See front section.

Glass yarn and fabric. *Textile Mercury & Argus, 123*, 416-418 (Sept. 15, 1950).

Describes England's newest textile industry and gives description of processing.

Method of making flour size. Ira L. Griffin. USP 2 520 597, Aug. 29, 1950.

A method of preparing a textile sizing composition from dry-milled proteinaceous flour, comprising preparing a pumpable aqueous slurry of the dry-milled flour which contains more water than flour and the natural enzyme constituents of the flour, instantly raising the temperature of this slurry sufficiently high to deactivate the enzyme constituents of the flour, instantly raising the temperature of this slurry sufficiently high to deactivate the enzyme constituents of the flour in liquid state, and then cooking the resulting flour slurry to produce a textile sizing composition of desired viscosity and other characteristics.

New method for preparing and storing size. Anon. *Textile Bull. 76*, 113-14 (Sept. 1950).

Efficient heating and constant agitation produce a better method for handling and storing size, according to reports from Southern Regional Research Laboratory, Bureau of Agricultural and Industrial Chemistry, at New Orleans, La. As described by U. S. P. 2,516,884, the apparatus includes storage tank, a pump, a simple heat exchanger, and a size box so connected that the pump withdraws fluid simultaneously from bottom of size box and forces it through heat exchanger. Designed for cotton textile slasher.

New positively controlled tension permits continuous warp dyeing and slashing. Richard C. Scott. *Textile World 100*, 114-117 (Sept. 1950).

Combination dyeing-slashing range prepares denim warps by pigment-dispersion or regular dye-bath method at 25 yd. per min., on new Unistel-Batchelder patented range. The range runs continuously, with no stops for loose ends or doffing. Woods Mfg. Co., Ontario, Canada, believes that a missing end in the weave room can be tied in less expensively than the dyeing range can be stopped. Continuous doffing of loom beam is done quickly, with no stopping of range, and with a loss of only one yard of good dyed yarn. Mfr: Unistel Textile Machinery Corp., Port Chester, N. Y.

Nomograph for size-analysis calculations. H. Evans Zeiger and H. M. Waddle. *Textile Industries 114*, 120-121 (Oct. 1950).

Time-saving nomograph calculates % size on yarn, % size on bone-dry basis, % size corrected for a given moisture content, % size for a given regain.

Orthocryl. *Rayon & Syn. Tex. 31*, 119-120 (Sept. 1950).

A new polymer, ORTHOCRYL, is applied in the sizing of 20, 30, 40, and 50 denier nylon for tricot fabrics, and in warp slashing of naked nylon yarn. Reduced shedding, retention of size on the warp are claimed. It is also being used on acetate warps without the use of a plasticizing agent, resulting in cleaner cloth on following construction: 200 ends, 75/3/19 Eastman yarn, 60 picks of 150/3/40 dull Celanese acetate.

Slasher cylinder uses less steam, uses it more efficiently. Anon. *Textile World 100*, 154 (Oct. 1950). See front section.

Slasher room controls. James R. Anderson. *Bobbin & Beaker 8*, 24-25 (Spring, 1950).

Review of control applications to slasher process, including: 1) introduction of compressed air into size kettle to help break up size lumps; 2) control of temperature, especially the critical range from 160°-180°, by means of the timing cam; 3) size box level controls; 4) control of size viscosity by temperature means; 5) steam and condensate controls of cylinder temperature.

Slasher take-up uses magnetic-clutch motor. James S. Campbell. *Textile World 100,* 109, 280 (Oct. 1950).

Verney Corp., Brunswick, Me., builds its own slasher drive after installation of Uxbridge "Gentle-Air" slasher. The company used a 7½-h.p., 1,800 rpm Louis Allis magnetic-clutch motor that was equipped with a dry-type rectifier. The drive has performed satisfactorily for two years. Yarn numbers vary from 12s to 28s, and beam ends from 3,000 to 7,000. Thee 70-inch beams have 26-inch diameter heads. The procedure for revamping the drive; the governor contacts were disconnected, and direct current was run directly to the clutch by means of a 300-ohm, 5-amp rheostat and an 0-to-10 amp ammeter in series. After removing the friction clutch, Verney engineers connected the motor drive shaft to the warp beam by means of a single-roller chain. Necessary gearing was installed, and a 9-tooth sprocket on the motor shaft drove a 36-tooth sprocket on the jack shaft. Conversely, a 9-tooth sprocket on the jack shaft then drove a 36-tooth sprocket which took the place of the former friction drive on the warp-beam shaft. About 2.4 amp. of direct current at a potential of 192 was carried on the clutch throughout slasher operation. Desired yarn tension was obtained by adjustment of the hand rheostat. A limit switch on the shipper rod automatically cut in rheostat resistance at jogging speeds and stops, such resistance being shunted out on shifts to high speed.

Warping apparatus. Russell P. Drake (to Barber-Colman Co.). USP 2 520 135, Aug. 29, 1950.

A warper having, in combination, a driving drum, means supporting in operative association with the drum a warp beam having circular heads at opposite ends, the supporting means including a pair of pivotally supported arms, brake means for stopping the beam comprising a shoe for coaction with one of the heads, a slide pivotally supporting the brake shoe and mounted for movement toward and from the beam, the shoe being pivotally supported on an axis disposed between the beam head and the pivotal support for the arm, means for actuating the slide to cause the brake shoe to engage its beam head, and means normally supporting the brake shoe against rocking movement with respect to the beam head comprising a stop member carried by the beam arm and a cam member on the brake shoe for coaction with the stop member the stop member being supported for movement in a direction away from the beam head and a spring action upon the stop member to hold it yieldably

against movement under the weight of the brake shoe.

Weaving C 2

Combating loom vibration. Jas. E. Doyle. *Am. Wool Cotton Reptr. 64,* 45, 47 (Sept. 21, 1950).

Information, based on the results of a great number of experiments conducted over a period of years, on loom vibration and its elimination is discussed. Steel, with its high modulus of elasticity, is claimed to be the best medium to use in opposition to impact values to eliminate vibration.

Construction of warp tapestry fabrics. J. Cowburn. *Textile Mfr. 76,* 427-8 (Sept. 1950).

Article continues from July and August issues, discusses five-warp weaving.

Contemporary design. *Machine Design 22,* 130-139 (Sept. 1950).

A pictorial review of the most recent innovations in the textile field.

Efficient mixing of irregular weft yarns. D. C. Snowden & J. Sidi. *J. Tex. Inst. 41,* 507-525 (July 1950).

This paper discusses the possibilities as regards warp mixing on two types of looms: (1) looms which have multiple boxes at one side only, (2) looms with multiple boxes at both sides and picking-at-will. Detailed results which were obtained are also presented.

Glass fabrics readied for major war role. Anon. *Am. Wool Cotton Reptr. 64,* 14-15, 107-10 (Sept. 21, 1950).

The history of Hess, Goldsmith & Co., world's largest glass fiber weavers, is given with a review of the progress and outlook for glass products.

Lock for pneumatic thread removers. Richard G. Turner (to Crompton & Knowles Loom Works). USP 2 520 580, Aug. 29, 1950.

In a weft replenishing loom having a pneumatic thread remover, a carrier for the thread remover mounted for movement relatively to the loom, means moving the carrier from the normal idle position thereof to a thread pick-up position incident to a weft replenishing operation of the loom, a lock normally in non-locking position with respect to the carrier when the latter is in the idle position thereof but moving to locking position with respect to the carrier when the latter is moved to the thread pick-up position

thereof, and a resetter for the carrier having a movement subsequent to the weft replenishing operation and effective during the first part of the movement thereof to move the lock to unlocking position with respect to the carrier and thereafter effective during the latter part of the movement to return the carrier to the normal idle position thereof.

Loom harness. John Jacob Kaufmann (to Steel Heddle Mfg. Co.) USP 2 522 043, Sept. 12, 1950.

In a loom harness frame having longitudinal heddle rods mounted therein, and heddles on the rods, the heddles having, in addition to the usual warp eyes and mortises for mounting the heddles on the rods, bifurcated end portions for engaging stressed by the formation of the shed, the bifurcated end portions for engaging stressed by the formation of the shed, the bifurcated end portions and the mortises for mounting the heddles on the rods being so shaped and positioned that the base portion of the slot of the bifurcated portion at one end of a particular heddle will bear against the fixed portion of the frame when the inner end of the mortise at that end of the heddle bears against the inner marginal edge of its heddle rod.

Loom shuttle tensioning device. John J. Kaufmann, Jr. (to Steel Heddle Mfg. Co.). USP 2 518 696, Aug. 15, 1950.

In a loom shuttle of the automatic threading type having a threading block mounted in one end thereof which threading block is provided with a thread channel through which the filling yarn passes, and spring pressed tension members mounted in the threading block and between which the filling yarn passes, the tension members having their intermediate portions spaced to provide a yarn passageway of a width less than the thickness of the yarn throughout the extent of the passageway.

Manufacture of gripper axminster carpet. A. Crossland. *Textile Mfr. 76*, 411-15 (Sept. 1950).

Features of the gripper loom are covered. Typical moderate-cost weaves are shown, and functions of gripper, carriers, knife, reed, take-up, tufting, and Jacquard are explained. Mfr: Carpet Trades Ltd., Kidderminster, England.

Measuring shuttle tension. Ernest J. Saxl. *Textile Industries 114*, 131, 133, 135. (Oct. 1950). See front section.

Measuring the tension of warp threads on the loom. J. Henno & R. Jouhet. *Bull. del 'Institut Textile N20*, 38 (Aug. 1950); *in French.*

The authors suggest a method of measuring the tension of the warp threads on a weaving loom, and describe the apparatus they have made for the purpose of making this measurement.

Minimizing reed marks in nylon. W. Ellis Mann. *Textile Age 14*, 54-5 (Sept. 1950).

It has been observed that the hungry, reedy appearance in nylon fabrics is eliminated by passing the fabric over 2 or 3 rather sharp angles after the filling has been beaten into the fell of the cloth and before any fabric "set" has been affected. The warp ends are spread or moved over, thus closing up the reed marks. Methods that may be used are described. Mfr. E. I. duPont de Nemours & Co.

New shuttleless loom. Anon. *Textile Recorder 68*, 140-42 (Sept. 1950). See front section.

Photoelectric weft detector for looms. Raymond F. Dion & Artemio Laraia (to Crompton & Knowles Loom Works) USP 2 522 101, Sept. 12, 1950.

A loom weft detector system including a source of light and two photoelectric cells and rendered operative to indicate weft exhaustion by simultaneous differential illumination of the cells by beams of light of different intensities derived from the source when weft being detected approaches exhaustion.

Picker stick linkage (double links). Geo. H. Hufferd (to Houdaille-Hershey Corp.). Can. P. 468 055, Sept. 12, 1950.

A linkage for controlling the movement of a picker stick of a loom comprising a primary bracket adapted for securement to the rock shaft of the loom, the primary bracket defining a pair of vertically spaced pivot bearings overlying the end of the rock shaft; a secondary bracket of generally U-shaped configuration having its base portion adapted for securement to a picker stick and disposed with the arm portions thereof projecting toward the primary bracket, the arm portions of the secondary bracket being sufficiently laterally spaced to straddle the primary bracket; a first pair of aligned pivot bearings respectively formed in the lower part of the arm portion; a second pair of aligned pivot bearings respectively formed in the upper part of the arm portions; a pair of first links pivotally connected between the lower pivot bearings of the primary bracket and the lower pivot bearings of the secondary

bracket; and a pair of second links pivotally connected between the upper pivot bearing of the primary bracket and the upper pivot bearings of the secondary bracket, the pairs of links being constructed and arranged to control the movements of the picker stick to shift the shuttle-engaging portion thereof along a substantially straight line path.

Pneumatic thread remover for weft replenishing looms. Richard G. Turner (to Crompton & Knowles Loom Works). USP 2 520 579, Aug. 29, 1950.

In control means for the pneumatic thread remover of a loom having a weft replenishing mechanism including a bobbin transferrer arm, a carrier for the remover capable of being either in normal idle position or in operating thread pick-up position, a pivot stud for the transferrer arm around which a carrier moves, a mounting on the stud, means holding the mounting in adjusted angular position around the stud, magnetic means on the mounting normally effective maintain the carrier in normal position, the transferrer arm incident to a weft replenishing operation of the loom moving the carrier from the normal position thereof to the pick-up position thereof, and other magnetic means on the mounting holding the carrier in the pick-up position.

Productivity in cotton weaving. *Can. Textile J. 67,* 68 (Sept. 15, 1950).

American-British comparison in respect to the two countries' weaving production and methods, under ECA sponsorship.

Quality control at Hardwick Woolen Mills. Anon. *Textile Indudustries, 114,* 115-116 (Oct. 1950).

The feature of Hardwick's method of mill inspection of fabric is the novel installation of electric lights under and around each loom in the weaving depeartment. Two lights are placed on the floor between the crankshaft and the warp beam, and one is located at each side of the loom. The two under-loom lights help the weaver to spot mispicks and defects of other types. Article outlines briefly other methods usede by the mill's quality-control program, including wet-processing instrument control.

Recirculating filter changes medium automatically. Anon. *Textile World 100,* 150 (Oct. 1950). See front section.

Right hand filling stop motion. C. A. Gunn. *Textile Industries, 114,* 112-113 (Oct. 1950). See front section.

Ruti swing-lever dobby. W. Middlebrook. *Textile Mfr. 76,* 421-23 (Sept. 1950).

Ruti's swing-lever dobby illustrates the continental transition from "lag" dobbies to "paper" dobbies, with an arrangement of jacks and hooks similar to the Hattersley patent heald machine (T. M. May). Details of dobby's mechanism are given. Mfr: Brocklehurst-Whiston Amalgamated Ltd.

Stop mechanism for shifting shuttle box looms. Clifford Darwin (to Crompton & Knowles Loom Works). USP 2 523 648, Sept. 26, 1950.

In electric stopping means for a loom having a knock-off bunter and having a lay provided with a dagger and a gang of shuttle boxes which shift during a shifting period preceding a picking operation and starting while the lay is moving forwardly, shuttle box shifting mechanism operating at the start of a shifting period to shift the gang of shuttle boxes, the mechanism including a coupling moving with the gang and a detent normally in operative position with respect to an actuator to cause the gang to be moved by the actuator but moved out of the operative position if the gang is unable to shift, a normally open electric switch closed by the detent when the latter moves out of the operative position thereof, and electromagnetically controlled means cooperating with the bunter incident to closure of the switch during forward movement of the lay to initiate loom stoppage early in the shifting period.

Studies in textile design. "Norwood". *Textile Recorder 68,* 137-38 (Sept. 1950).

Main features of a honeycomb weave, with samples, are outlined.

Thick-and-thin crepe. Anon. *Am. Wool Cotton Reptr. 64,* 9-10, 16 (Sept. 28, 1950).

A thick-and-thin flat crepe rayon fabric with all-over irregularities and extra crinkle is analyzed. The filling is a combination of both "S" and "Z" twisted types of yarns of 100 denier hard-twisted yarn and 200 denier thick-and-thin type yarn made twist-on-twist. The warp yarn is 75 denier acetate with a rather large number of ends per inch. A box loom is recommended for weaving this fabric.

Warp and weft shrinkage determination apparatus. Jean Henno & Robt. Jouhet. *Bull. Inst. Textile de France, 17,* 57-8 (1950); *Brit. Cotton Ind. Res. Assoc.* 30, 353 (1950).

An apparatus for determining warp and weft

shrinkage on the crimped yarns taken from the woven fabric is briefly described and illustrated schematically.

Yarn irregularities and their effect on viscose rayon fabrics. R. A. McFarlane. *J. Tex. Inst. 41,* 566-589 (July 1950).

Examples of yarn irregularities and apparent yarn irregularities are discussed with particular reference to viscose rayon fabrics. It is concluded that the number of irregularities present in the finished fabric caused during fiber manufacture is small compared with the number caused during yarn processing and weaving. Also that the method of processing adopted by the dyer and weaver can increase or decrease the prominence of yarn irregularity in the finished fabric.

Knitting C 3

Adjustable Yarn cone holder for circular knitting. Anon. *Textile Industries 114,* 129 (Oct. 1950).

Seconds, pressoffs, and waste are reduced by means of a new adjustable cone holder for circular knitting machines. The adjustable cone holder can be made by the mill shop. It can be adjusted for rayon, nylon, and silk yarns which have a tendency to fall down around the base of the cone when knitting stops abruptly.

Apparatus for forming designs in nylon stockings. Elmer F. Seemuller (to Perforations, Inc.) USP 2 524 604, Oct. 3, 1950.

In an apparatus for forming in a nylon stocking a permanent identifying design, the combination on a flat female die with a series of holes distributed over a two-dimensional area in a pattern according to the desired identifying design, a framework supporting the female die, the female die being arranged in overhanging relation to the framework to permit the open end of the stocking to be telescoped over the die for the formation of the design in one thickness only of the material, a cooperating male die comprising a series of sharply pointed needles arranged in the same pattern and having their points terminating in a common plane and tapered to a size larger than the openings in the stocking formed by the loops, means for operating one of the dies relatively to the other to cause the needles, all at the same time, to enter the holes of the female die, the needles by such operation being caused to penetrate the single thickness of material placed flatly upon the female die and by direct contact with the loops through which they pass

to produce a series of loop enlargements conforming to the aforesaid pattern, and means for heating the loops during the needle penetration period to a temperature at which the nylon composing the stocking is set to set the loops in their enlarged condition and thereby form and perpetuate the desired identifying design.

Camera tour: Take a trip through the Hans Bick Plant. Anon. *Textile World, 100,* 96-99 (Oct. 1950).

Picture story of Hans C. Bick hosiery-finishing plant.

Circular Jersey machines. Anon. *Am. Wool Cotton Reptr. 64,* 55, 57, 63 (Sept. 21, 1950).

This second article from the book "Pattern Where Designing for Circular Jersey Knitting Machines" by Abraham Abrams and Lester Mischon discusses the method by which plain and tuck fabrics are knitted on circular knitting machines by using different colored yarns on predetermined feeds.

Defects in knitted structures due to yarn irregularities. Survey with a particular reference to underwear and outerwear. E. Millson Walker & Charlotte E. Sleath. *J. Tex. Inst. 41,* 559-564 (July 1950).

The subject of defects in knitted structures due to irregularities is presented as a review of the subject in the light of practical experience over many years in dealing with the defects in yarn irregularities which are peculiar to knitted as opposed to woven structures.

Effect of yarn irregularity on fine gauge fashioned hosiery. H. Univin & J. W. Reast. *J. Tex. Inst. 41,* 547-558 (July 1950).

The effect of yarn irregularity, from the hosiery manufacture's viewpoint, on fine gauge hosiery is discussed. The authors define yarn irregularity as any factor outside the manufacture's control which contributes to the yarn's failure to fulfill its function of knitting good hosiery. General rules to which yarns and windings should conform and classification of faults and irregularities are discussed in detail.

Fabric guiding device. Eugene St. Pierre (to Hemphill Co.). Can. P. 463 328, Feb. 21, 1950.

In a circular, independent needle, knitting machine having a cylinder, means for guiding knitted fabric which includes a finger having a portion projectable into the cylinder across the needle circle along an arcuate path the finger

being adapted to contact knitted fabric and guide it downwardly into the cylinder and prevent it from bunching and means for so projecting the finger in a plurality of progressive, timed steps.

Full-fashioned production tips. Anon. *Textile Industries 114,* 143 (Oct. 1950).

Grey-goods inspectors should exchange menders for good stockings before they leave the aisle. Operatives handle stockings by the toe and welt to prevent pull threads. Small, uniform bundles of each knitter's work serve to keep work separated for convenience in handling and figuring pay.

Hosiery. Willy de Mond (to Sanson Hosiery Mills, Inc.). USP 2 520 091, Aug. 22, 1950.

As a new article of manufacture, a stocking plain-knitted from nylon and accordion pleated, the pleat-defining creases being permanently set into the fabric at an angle to the fabric courses and visible when the stocking is relaxed, but disappearing as the stocking is drawn onto the leg of the wearer.

Hosiery finishing machine. Henry Richter (to Paramount Textile Machinery Co.). USP 2 519 981, Aug. 22, 1950.

A hosiery drying machine comprising a plurality of drying forms each movable between a drying position and a boarding position, means including a series of cams for moving the forms selectively between the positions, means for rotating the cams, a clutch for controlling the operation of the rotating means, means for selectively determing the sequence of movement of the forms by the cams, and means including an electric circuit and a switch operating bar adapted to be actuated by the body of the operator for controlling the operation of the selective means and the clutch.

Inlaid filling yarns increase knit-fabric versatility. Harry Wignall. *Textile World 100,* 114-15 (Oct. 1950).

Typical inlaid knitted fabrics are analyzed, and some production details are outlined.

Knitting machines. Sterling C. Mack (to Julius Kayser & Co.). Can. P. 468 353, Sept. 26, 1950.

A method of narrowing a knit fabric having a course of loops on the needles of an en masse movable bank which comprises shifting a group of loop-engaging points course-wise step-by-step the distance of one needle at a time along the bank and into alignment with needles thereof,

each successive coursewise movement bringing a point aforesaid into alignment with an additional needle, dipping and raising the points along needles aforesaid after each coursewise shift, the points being free of loops during certain of their coursewise shifts and carrying loops during other of their coursewise shifts.

Knitting process. Von K. A. Henning. *Melliand Textilber 31,* 400-403 (June 1950); *in German.*

This article describes a systematic investigation of the basic loop interlacings of plain knitting machines, together with their application and further development for designs.

Mass production of men's argyles. Anon. *Knitter 14,* 33-34, 36, 38, 40 (Sept. 1950).

A new knitting machine makes possible a new process called "edge-framing" that produces men's argyles of clear patterns and brilliant colors at popular prices. Hand-knit effects are obtained by the machine patented by Standard Hosiery Mills, Burlington, N. C., a division of the Chester H. Roth Co., Inc. 12 dozen per day are produced; the machine is completely automatic, including the changing of yarns. U. S. Patent 2 516 697.

Modern knitting machinery. J. B. Lancashire. *Textile Recorder 68,* 125-27 (Sept. 1950).

Outstanding features of post-war equipment are outlined, with particular reference to those likely to exert an important influence on the finished products of the knitting industry.

New stop-motion unit for knitting machines. Anon. *Textile Mfr. 76,* 438 (Sept. 1950).

New drop wire electric stop motion for circular machine. Mfr. G. Stibbe & Co., Leicester.

New totally enclosed stocking packing machine. Anon. *Textile Mfr. 76,* 423 (Sept. 1950).

A cost reduction of about 33⅓% is made possible by the new "Whitehall" stocking-packing machine which encloses and seals hosiery in a cellophane bag automatically. All surfaces of the machine are highly polished; while totally enclosed, the inside is illuminated and completely visible through translucent perspex covers. Packaging proceeds at 30 pairs per minute. Automatic stop motions are provided. Mfr: Strachan & Henshaw Ltd., Bristol 5, England.

Offset drill for knitting machine fixers. Ernest Bridges. *Textile Industries 114,* 136 (Oct. 1950).

An offset drill to remove a broken screw from an inaccessible part of a machine is described.

Outerwear progress & prospects. Joseph Rab. *Knitter 14*, 43-44, 46, 48, 50 (Sept. 1950).

Review of progress made in machines and method by the outerwear knitting industry.

Preventive maintenance improves looper operation. E. Dalton White. *Textile World 100*, 129, 131 (Sept. 1950).

A description of preventive maintenance and machine adjustment at Spalding Knitting Mills, Griffin, Ga., which is highlighted by the reports that Spalding menders amount to only 0.43% and that Spalding looping machines operate up to 14 years without breakdown.

Saving space with cone drive speed reducer. Anon. *Rayon & Syn. Tex. 31*, 136 (Sept. 1950).

Clear aisle space between knitting machines made possible by Winona Mills, Winona, Minn., by use of right-angled drive from individual motors through cone-drive speed reducers. The reducers, made by Cone-Drive Gears Division, Michigan Tool Co., are roughly two thirds the size of conventional reducers of the same power rating.

Steps to better knitting with nylon. R. L. Voigt & J. A. Newman. *Rayon & Syn. Tex. 31*, 89-90 (Sept. 1950).

Tips on the handling of spun-nylon yarns during knitting.

Straight knitting machine. Emil J. Berger & Howard K. West (to Dexdale Hosiery Mills.). 2 519 875, Aug. 22, 1950.

In a straight knitting machine, a bar with a series of hook needles, a bar with needlehook cover points to cooperate with the needles in stitch formation; supporting means for the point bar rockable about a horizontal axis; means for rocking the point bar supporting means including a rotary cam; a spring biased follower arm and ranged to be actuated by the cam, the arm being formed in 2 sections connected by a knuckle joint; and means operative at predetermined times during the knitting to break the knuckle joint of the arm and to prevent its actuation by the cam, and thereby preclude actuation of the point bar.

Stripping nylon with textone (sodium chlorite). W. C. Peurifoy, Jr. *Am. Dyestuff Reptr. 39*, 605 (Sept. 4, 1950).

Special stripping procedures are necessary to obtain sufficient color reduction and clarity in

nylon hosiery. Mfr: Hoover Hosiery Mills.

Temperature control. Drew B. Daubert. *Rayon & Syn. Tex. 31*, 63-65 (Sept. 1950).

Discusses control of temperature during heat setting of nylon hosiery on varied machines.

Thermoplastic setting of mends ups first-quality hosiery yield. Anon. *Textile Industries 114*, 106-7 (Oct. 1950).

A thermoplastic process for mending pull threads tripled mender-lot yields in a large New England mill. Called Thermset, the new method is said to permanently and invisibly correct snags on press menders. About 15 to 25 dozens of stockings can be processed per mender per 8 hours. The repair is fused by means of nylon's plasticizing characteristic while under force and heat. Mill estimates that about $2.50 per dozen, the difference between the prices of irregular and first-quality hosiery, can be earned by the new process. Each mender of the mill is equipped with the Thermset instrument.

Three-carrier knitting solves uneven-yarn problem. H. B. Lefeaux. *Textile World 100*, 112-113 (Sept. 1950).

On medium-weight nylon yarns, three-carrier knitting eliminates 50% of throwouts caused by uneven yarn.

Welt closing mechanism for straight knitting machines. Eugene M. Zesch (to Karl Lieberknecht, Inc.). USP 2 519 991, Aug. 22, 1950.

Welt closing mechanism for a knitting machine having a straight series of needles, comprising a welt rod; a bar with hook instrumentalities for engaging the starting course of welt fabric on the needles, the bar having a shouldered ledge at the back thereof upon which the welt rod is placed, and a spring finger for normally holding the rod upon the ledge; means for supporting the welt fabric as it is being formed; and releasing means automatically operable, after a definite length of welt fabric is produced to dislodge the welt rod from the shoulder of the welt bar and to incidentally flex the spring finger and so release the rod to drop toward the fabric behind the hook instrumentalities of the bar.

Special fabrics C 4

Axminster needle drive mechanism. Julius H. Pfau (to Alexander Smith & Sons Carpet Co.) USP 2 524 734, Oct. 3, 1950.

In an Axminster loom having a needle adapted to

be reciprocated to lay double weft shots through a warp shed, drive mechanism connected to reciprocate the needle, the mechanism comprising a pivotd arm, motion multiplying means connecting the arm to actuate the needle, a continuously rotating drive member, and connecting members connecting the drive member to cause reciprocating movement of the arm, the connecting members comprising a stationary sun gear, a planet gear of the same size as the sun gear driven by the driving member to revolve around the sun gear, and a link conected eccentrically to the planet gear and also connected to drive the arm, the eccentric connection being so disposed that the link is offset from the center of the planet gear toward the center of the sun gear when the planet gear is on the side of the sun gear toward the arm and the arm is at one limit of its stroke, the arm being so connected to the needle that the needle is then at the limit of its inward thrust in the warp shed.

Cloth board for axminster looms. Walter Y. Robb (to Crompton & Knowles Loom Works) USP 2 523 061, Sept. 19, 1950.

In an Axminster loom operating with a tube frame which rises preparatory to tuft formation and from which tuft yarns extend, a nose board, and a series of teeth formed on the nose board registering with the tuft yarns, the rear face of each tooth extending upwardly and forwardly and being provided with a groove to receive and guide the tuft yarns as the tube frame rises.

New type of non-woven fabric. John F. Ryan. AATCC paper, *Am. Dyestuff Reptr. 39*, P595 (Sept. 18, 1950).

A new type of non-woven fabric is described as "containing no bonding agent and with no interfiber fusion." Fabric structure depends upon fiber entanglement and interlocking. High porosity, a low degree of extensibility, and low density are some of the characteristics that make the fabric suitable for coating, saturating, and impregnating processes.

Inspection and testing C 5

New drive for cloth inspection. Anon. *Textile Recorder 68*, 139-40 (Sept. 1950).

A low-speed drive enables the inspector to run the machine at reduced speed when required for cloth inspection. Mfr: Wm. Dickinson & Sons, Blackburn, England.

STANDARD FINISHING D

Continuous bleaching systems. Anon. *The Dyer, 104*, 155-6 (Aug. 11, 1950).

Review of ten years experience with continuous bleaching systems shows a 3,000-6,000 lb.per-hr. production record on a wide range of piece goods. Peroxide systems are the most common ones, though the hypochlorite system has been proposed. Comparison of the two techniques are given in detail.

Control of caustic-silicate ratio in peroxide bleaching liquors. K. D. Ballou, J. J. Roarke & G. M. Gantz. AATCC paper, *Am. Dyestuff Reptr. 39*, P594 (Sept. 18, 1950).

The caustic-silica ratio in continuous-bleaching ranges is critical. Insufficient caustic soda in peroxide saturating liquor will promote the deposit of silica upon the bleaching equipment. Excess caustic hastens the breaking down of the peroxide and results in poor bleaching. Proportioning pumps and regular litrations may control the caustic-silica ratio.

A volumetric proceedure is recommended as a method of determining the Na2O-Si02 ratio in the peroxide saturator, using as a basis for determination the formation of sodium fluosilicate from hydrous silica and sodium fluoride.

Control of J-boxes & steamers in continuous bleaching. C. W. Bowden, Jr., & Drew B. Daubert. AATCC paper, *Am. Dyestuff Reptr. 39*, P595 (Sept. 18, 1950).

Control problems encountered in continuous bleaching were analyzed on the duPont J-box, the Mathieson Steamer, and the Becco J-box. The first two were said to be fairly simple devices to control. The Becco unit, however, required close attention to details of cloth level and external influences. Paper covers thermocouple location, mounting methods and circuit wiring for direct, averaging or differential temperature readings.

New pump for convenient safe transfer of acids. Anon. *Knitter 14*, 58 (Sept. 1950).

Safe and convenient transfer of acids from stainless-steel containers. Mfr: General Scientific Co., Philadelphia, Pa.

Nylon brushes replace teasels in woolen gigging. E. H. Helliwell. *Textile World 100*, 125, 304, 306, 308 (Sept. 1950).

Supply, inspection, and replacement problems of teasel burrs are eliminated by use of nylon-bristle brushes on woolen gigging machine.

Rayon Bleaching's Effect on structure. J. Pinte and Mme. Pierett. *Rayonne* 4, No. 1, 7-21 (1948).

Graphs and tables show the degrees of whiteness, degradation, and dye affinity of lustrous and delustered viscose rayons that were subjected to bleaching and steaming. Chlorite was found to be less harmful than hypochlorite. Steaming decreased dyeing affinity.

Rayon fibers. Dyeing & finishing of fibers. Anon. *The Dyer, 104,* 181, 183, 185 (Aug. 11, 1950).

The dyeing and finishing of viscose, acetate, cuprammonium, nylon, and other rayon fibers are reviewed. Causes of rayon shrinkage during washing and dyeing may be: bad finishing such as stretching during the final drying operation; residual shrinkage left in the yarn after spinning, swelling due to high water take-up during washing. Effective setting processes may counteract residual shrinkage in nylon. But the stretching of the fiber after setting will again cause shrinkage of nylon. Other topics discussed: anti-crease processes, and shrink-resistant processing for viscose staple fabrics.

Soap and detergents as affecting textiles. Foster Dee Snell. *AATT 5,* 155-61 (Sept. 1950).

Basic principles of detergents are reviewed. Wetting, types of surface-action agents, anionic agents, dispersion, and other topics are covered. Mfr: Foster D. Snell, Inc.

Some post-war trends in hosiery finishing. Alfred Carpenter. *Textile Recorder 68,* 131-32 (Sept. 1950).

Article reviews important improvements in hosiery finishing in recent years.

Some trends in nylon fabrics. H. E. Wenrich. *Rayon & Syn. Tex. 31,* 71-72 (Sept. 1950).

Trends toward nylon cords, shirtings, crepes, and yarns are briefly outlined.

Textile soaps. Milton A. Lesser. *Soap & Sanitary Chemicals,* 36-39, 141, 143 (Sept. 1950).

Improvements in textile soaps are sought, to offset competition from synthetic detergents. Advantages of both types are cited. Soap-synthetic mixtures are advocated for some uses. Formulas for various soaps given. 34 references.

Web feeding device for roll type driers. John J. Franklin (to Proctor & Schwartz, Inc.) USP 2 517 861, Aug. 8, 1950.

This invention relates to new and useful improvements in roll type driers, and more particularly

to driers for continuous web materials wherein the material is threaded back and forth vertically between and around two vertically spaced sets or series of rolls and advanced thereby in one general direction.

In driers of this type the problem exists of effectively controlling tension in the web resulting in shrinkage of the material as it passes through the drier. It has been proposed to minimize tension in the web in roll type driers by providing a separate individual driving motor of the shaded-pole type for each roll, and while this was a step in the right direction it did not completely overcome the difficulty because one characteristic of this arrangement is that excess driving power existing in a motor toward the delivery end of the drier is added to the excess power of the preceding driving motor cumulatively back to the feed end of the drier. This places the maximum tension on the material at the point where it contains the most moisture and is most subject to stretch. In the past this condition has been put up with due to insufficient public interest in the shrinkproof properties of materials. However, in recent years the public has become quite shrinkproof minded, and it has become increasingly more important to eliminate stretch in a material during the process of drying. With the foregoing in mind, one object of the present invention is to provide a roll drier of the type described wherein tension in the material and resulting stretch thereof is substantially eliminated. Another object of the invention is to provide a substantially tension-free roll type drier which is automatic in operation and entirely efficient and foolproof in use.

Wool bleaching. Wolsey Ltd., 31 King Street, Leicester. BP 637 150.

Improved process. The wool is immersed in a dilute solution of hydrogen peroxide (having a temperature not exceeding 50° C., and a pH between 6 and 10) for a time sufficient only to wet the wool thoroughly without allowing a great amount of bleaching to take place. Afterwards, the wool is freed from excess solution, removed and heated between 70° C. and 100° C. to effect the bleaching.

DYEING AND PRINTING E

Catcc-aatcc open forum. J. Robert Bonnar. *Am. Dyestuff Reptr. 39,* 636-639 (Sept. 18, 1950).

The questions on cotton dealt to a great extent with light-fast direct colors, developed blacks and

naphthol dyeing. There were also several questions on kier boiling versus J-Box boiling, pH of hypochlorite and crocking. Out of twenty-four questions, fourteen were answered which should be assumed satisfactory considering the time involved. Questions on synthetic fibers consisted mainly of inquiries as to nylon, dyeing, barre effects, saponification of acetate material and gas fading. There were also several questions concerning resin after-treatment. Most of the twenty-eight questions were answered. Shrink resistence and its implications with respect to wool dyeing was the most popular type of question concerning wool. Other questions involved dyeing procedure, effect on final pH of dyed wool, fastness to light and perspiration, and the role of sodium sulfate in the acid bath. Sixteen questions were placed before the board.

Coloration processes. Cyril M. Croft (to Camille Dreyfus) Can. P. 467 952, Sept. 5, 1950.

Process for the production of dyed textile materials having a basis of a synthetic linear polyamide condensation product, which comprises dyeing a textile material having a basis of a synthetic linear polyamide condensation product with a direct dyeing dyestuff which is relatively insoluble in water and which is applied in the form of aqueous dispersions and then subjecting the dyed textile material to steaming for 3 to 7 minutes at an elevated temperature of 225 to 235° F. and at a pressure of 4 to 8 pounds per square inch.

Coloring with resin bonded pigments. Dr. A. L. Peiker, Dr. T. F. Cooke, Dr. R. D. Vartanian, and Ralph D. Greene. *Calco Tech. Bull. 777*, 39 pages. See front section.

Continuous dyeing of textile materials. Glen F. Womble (to Dan River Mills, Inc.) Can. P. 467 865, Sept. 5, 1950.

Those steps in the method of continuous vat dyeing solid colors on textile materials which comprise applying to the textile a pigment from an unthickened water suspension or dispersion, removing the water by squeezing and heating to leave the pigment in the textile, and immediately subjecting the textile previously dried by heating to an alkaline reducing agent, and squeezing the fabric to obtain penetration of the reducing agent and contact with the pigments in the fabric.

Crown College improves package-dyeing system. Charles H. Leach. *Textile World, 100*, 92-93, 277-78, 280 (Oct. 1950).

New yarn dyehouse at Crown College has four

new features: (1) monorail system reduces handling of dye packages to two instances, once on the spindles and later off the spindles when the yarn is dry. (2) There are no trenches or pits with pumps, motors, and feedlines below the floor level—all dye machinery and pumps are installed at floor level, and in fact most valves and machine covers are shoulder high. (3) Dust-free, filtered air is used in extracting and drying. The Precipitron is used to clean the air electrostatically. Air is forced to extractors and dryers by means of pipes under the floor. Drying chambers have gate valves which control the flow of air. (4) Operators work around dye machinery from elevated walkway.

Doctor blade mechanism for rotary intaglio printing machines. Wm. E. Bennison (to R. Hoe & Co., Inc.). USP 2 523 643, Sept. 26, 1950.

In an intaglio printing machine, the combination of a printing cylinder, an impression mechanism cooperating with the cylinder, means to guide a web to be printed between the cylinder and the impression mechanism, a doctor blade holder, a doctor blade held by the holder normally wiping the peripheral surface of thee cylinder and movable supporting means for the holder, the supferent lengths, means articulating the arms reporting means including a pair of arms of difspectively to spaced points with the longer arm closer to the axis of the cylinder than the shorter arm, and means articulating the free ends of the arms to spaced points on the holder whereby the holder can be moved to carry the doctor blade away from the cylinder with a movement which initially at least has a component away from the web as it passes to the impression zone.

The doctor blade. *Textile Mecury & Argus 123*, 339-340 & 353. (Sept. 1, 1950).

The edge of the doctor blade is one of the most critical points in textile printing by engraved rollers. Practical guidance help by the author on the following factors are discussed: engraving, wear of rollers, color flow, corrosion and pitting feathering and flushing, and tracing.

Dye fastness by sunlight or fadeometer. J. P. Niederhauser. *Bull del 'Institut Textile N20*, 55 (Aug. 1950); *in French.*

The purpose of this study was to ascertain the order of magnitude of the difference between the fastness indices of 86 dyes exposed, on the one hand, to the light of the sun and, on the other hand, to the Fadeometer, the standard range of blues being taken as a basis. In 90% of these

experiments, the maximum difference between the fastness indices by these two methods of exposure is 1 unit. In the course of this work, differences were observed between the shades of some dyes, faded by one or the other of these methods. Certain dyestuffs applied to one fibre give a better fastness index when tested with the Fadeometer and, applied to a different fibre, under the same operational conditions, a lower fastness index when tested with the Fadeometer. This article therefore confirms the already known fact that the amount of fading under exposure to the Fadeometeer may be different from that which occurs under exposure to sunlight.

Dyeing. Henry Charles Olpin & Alexander James Wesson (to Camille Dreyfus) Can. P. 467 951, Sept. 5, 1950.

Process for dyeing textile material in package form with the aid of aqueous dispersions of water-insoluble dyestuffs or dyestuff components, which includes the operation of filtering the dye liquor before it reaches the package by means of a filter capable of preventing the passage of particles having a dimension in excess of 0.0005 mm.

Dyeing acetate rayon to leave viscose effects white. W. Muller. *Ciba Rev. 81,* 2965-7 (Aug. 1950).

When cellulose acetate and viscose blends are dyed it is difficult to prevent the viscose from picking up some of the dye. To remove this dye three methods are used which involve treatment with (1) Ultrason W, (2) potassium permanganate-sulfuric acid and (3) Hydrosulfite BLI Ciba-sodium hypochlorite. A table is presented which indicates dyes recommended for viscose rayon reserves, the degree of staining by each dye, which of the three methods of clearing the whites is/are effective in each case and any slight loss in depth, small change in shade or dulling caused by these treatments.

Dyeing affinity of viscose rayon. M. LeChanoine Pinte, M. Paul Rochas, & Mlle. Essertel. *Bull. del 'Institut Textile N20,* 34 (Aug. 1950); *in French.*

The authors have studied the variations in speed and dyeing capacity of Viscose Rayon yarn of varied denier.

Dyeing of wool with vat colors and particular emphasis on the Anthraquinone types. Arthur E. Webber. AATCC paper, *Am. Dyestuff Reptr. 39,* P596 (Sept. 18, 1950).

Maximum brilliance and fastness are obtained by

means of anthraquinone vat colors without damage to tensile strength, elasticity, or "hand" of fabric. A full range of shades of a Fade-Ometer rating at least equal to AATCC Standard No. 6.

Dyeing Orlon and Fiber V. Anon. *Textile World 100,* 95-96 (Sept. 1950). See front section.

Dyeing wool stock, tops, and yarn. V. Robert W. Joerger. *Textile Industries 114,* 145 (Oct. 1950). See TTD: 8, 652. 193. Also see front section.

Dyeing basic nitrogenous fibers by the metachrome process with chromable azo dyes having nitrogen free substituents ortho to the azo group. Chester A. Amick, Willard H. Watkins & Henry E. Millson (to Am. Cyanamid Co.). USP 2 520 080, Aug. 22, 1950.

A method of dyeing which comprises subjecting substantially unmetallized basic nitrogenous fibers to the action of a dye bath formed by mixing a chromable azo dye having nitrogen-free groups ortho to the azo group, a soluble alkaline earth metal salt the anion of which does not form complexes with chromium containing salts, a soluble chromium containing compound, water, and sufficient alkali to make the bath alkaline to cause the dye to react with the alkaline earth metal salt to form an alkaline earth metal complex of the dye and insufficient to materially damage the fibers, partially dyeing the fibers from the complex at an elevated temperature, gradually lowering the pH of the bath to a point where decomposition of the complex and chromation of the dye take place, and completing the dyeing at the lowered pH.

Dyeing protein fibers with chromable anthraquinone colors by the metachrome process. Willard H. Watkins, Henry E. Millson & Chester A. Amick (to Am. Cyanamid Co.). USP 2 520 108, Aug. 22, 1950.

A method of dyeing which comprises subjecting substantially unmetallized protein fibers to the action of a dye bath formed by mixing a chromable anthraquinone dye, a soluble alkaline earth metal salt the anion of which does not form complexes with chromium containing salts, a soluble chromium containing salt, water, and sufficient alkali to make the bath alkaline and to cause the dye to react with the alkaline earth metal salt to form an alkaline earth metal complex of the dye and insufficient to materially damage the fibers, partially dyeing the fibers from the complex gradually lowering the pH of the bath to a point where decomposition of the

complex and chromation of the dye take place, and completing the dyeing at the lowered pH.

Effect of the "Harriset" treatment on the shade and strength of dyed wool. *The Technical Bull. 6,* 128 (Sept. 1950).

Alterations in the shade and strength of vat-dyed wool, stablized according to the "Harriset" process and published V 1. 5, now supplemented by detailed results of the same treatment on wool dyed with acid, CHROMACYL, and chrome colors. In general, the effect of "Harriset" stablilization on shade and strength varied from trace to appreciable. Table.

Effects of yarn irregularity in dyeing and finishing. R. G. Fargher, H. M. Taylor & F. W. Thomas. *J. Tex. Inst. 41,* 590-608 (July 1950).

Irregularities introduced into yarns during spinning and the effects of these irregularities on dyeing and finishing are discussed. The following subjects are discussed: (1) The effects of weight irregularities, (2) Effects of variation in cotton characters, (3) Effects of neppiness.

Fluorescent material. Richard R. Sitzler & Geo. E. Dennison (to Camille Dreyfus). Can. P. 463 754, Mar. 14, 1950.

In a process for the production of colored fluorescent cellulose acetate filamentary materials exhibiting substantially the same color under visible as well as ultra-violet illumination, the step of dyeing cellulose acetate textile material having incorporated therein a finely divided pigment consisting of zinc sulfide fluorescent in a red color with a dyebath comprising p-nitro-benzene-azo-4-methyl-2-di-hydroxy-ethyl-amino - benzene, water and sulfonated ricinoleic acid.

Measurement of dyeing properties and correlation with orientation in nylon yarn. A. R. Munden. *J. Tex. Inst. 41,* 609-634. (July 1950).

Dyeing rate, equilibrium dye uptake and penetration rate studies carried out with anionic and dispersed acetate dyestuffs on a range of nylon samples with various degrees of orientation are presented. Differences in the appearance of dyed nylon fabrics produced by irregularities in orientation are shown to be dependent on differences in dyeing rate. A routine method of assessing the within package variations in orientation is also described.

Metachrome dyeing procedure. Henry E. Millson, Chester A. Amick & Willard H. Watkins (to American Cyanamid Co.). USP 2 520 105, Aug. 22, 1950.

A method of dyeing which comprises subjecting substantially unmetallized basic nitrogenous fibers to the action of a dye bath formed by mixing a chromable dye, a soluble chromium containing salt, a soluble alkaline earth metal salt, a water-dispersible surface-active composition containing at least one cationic surface active agent, water, and sufficient alkali to make the bath alkaline and to cause the dye to react with the alkaline earth metal salt to form an alkaline earth metal complex of the dye and insufficient to materially damage the fibers, partially dyeing thee fibers from the complex, gradually lowering the pH of the bath to a point where decomposition of the complex and chromation take place, and completing the dyeing at the lowered pH.

Metachrome dyeing procedure and products dyed therewith. Chester A. Amick & Geo. L. Royer (to Am. Cyanamid Co.). USP 2 520 081, Aug. 22, 1950.

A method of dyeing which comprises subjecting a substantially unmetallized basic nitrogenous fiber to the action of a dye bath formed by mixing a chromable dye, a soluble chromium compound, a cationic surface active agent, a soluble salt of a metal of group II-b of the periodic system, water, and sufficient alkali to make the pH of the bath alkaline but not greater than 9.5 and to cause thee dye to react with thee group II-b metal salt to form a group II-b metal complex of the dye, partially dyeing the fiber from the complex, gradually lowering the pH of the bath to a point where decomposition of the complex and chromation of the dye take place, and completing the dyeing at a pH of not less than about 4.0.

Method of producing dyeings metallized with aluminum, manganese, iron, cobalt, nickel, copper, tin, and zirconium. Geo. L. Royer & Chester A. Amick (to Am. Cyanamid Co.). USP 2 520 106, Aug. 22, 1950.

A method of dyeing which comprises subjecting substantially unmetallized basic nitrogenous fibers to the action of a dye bath formed by mixing a metallizable dye, a soluble metallizing salt selected from the salts of aluminum, manganese, iron, cobalt, nickel, copper, zirconium and tin, a soluble salt of a metal of group II of the periodic system having an atomic weight less than mercury, a water dispersible cationic surface active agent, water, and sufficient alkali to make the pH of the bath alkaline, but not higher than 9.5 and to cause the dye to react with the alkaline earth metal salt to form an alkaline earth complex of the dye, partially dyeing the fibers from

the complex, gradually lowering the pH of the bath at least to the point where decomposition of the complex and metallization of the dye take place, and completing the dyeing at the lowered pH.

New package-dye plant is well planned. W. A. Thomason, Jr. *Textile World 100*, 112-13 (Oct. 1950).

A picture story of Aberfoyle Mfg. Co.'s new plant at Bridgeton, N. J., showing modern methods of gassing, bleaching, mercerizing, and dyeing yarns.

Package dyeing. Ernest L. Caswell. AATCC paper, *Am. Dyestuff Reptr. 39*, P595 (Sept. 18, 1950).

Yarn, winding, carriers, extracting, and dyeing are discussed, along with ⅝ in., 1⅝ in., Franklin Spring and Barber Colman cheese.

Pad-steam dyeing of nylon with acid and direct colors. *The Technical Bull. 6*, 128 (Sept. 1950). See front section.

Positive knock-off mechanism for dye kettles. Anon. *Textile Industries 114*, 163 (Oct. 1950).

Printing of synthetics—Trends and mill problems. Arthur F. McLean. AATCC paper, *Am. Dyestuff Reptr. 39*, P596 (Sept. 18, 1950).

Printing problems are intensified by tendancy of modern processing to set up strains and stresses in fabric before it gets to printer. Preparation and condition of fabric must be correct for precise printing. Demands for all-purpose wearing apparel poses another problem to printer.

Process for printing on pliable, normally resilient, thermoplastic sheeting. Leopold Rado. Can. P. 468 151, Sept. 19, 1950.

A process for printing an image on pliable, normally resilient, thermoplastic sheeting which comprises retaining the sheeting between layers of non-thermoplastic material, at least one of which carries an image in contact with the sheet, transferring the image to the sheeting by maintaining a temperature at which the sheeting is plastic, applying pressure, and subsequently cooling the sheeting, and separating at least one of the non-thermoplastic layers.

Recent developments in hosiery dyeing and finishing. E. R. Trotman. *Textile Recorder, 68*, 128-30 (Sept. 1950).

Special problems of knitwear dyers and finishers cited as: (1) Need for clear, bright shades with fastness to washing and light demands dyes that are not easy to apply. (2) Selection of proper dyestuff becomes complicated when it is necessary to dye woolen goods which have received shrink-resistant treatment. (3) Difficulty of dyeing any wool and nylon blends. Proper agitation of dye bath for yarn-dyeing process always necessary (but hard to obtain). The "Pulsator" hank-dyeing machine (Samuel Pegg & Son) is said to achieve minimum entangling of yarn and unlevelness of dyeing. Details of the "Pulsator" machine and those of the "Ebflo" (Which incorporates a brand new method of circulation) are given. Another new hank-dyeing machine (the "Plusflo") meters out the dye liquor and provides a control which makes it possible for a predetermined amount of liquor to circulate in a given time. Cheese-dyeing machines of newer type are outlined.

Screen-printing machine is completely automatic. Anon. *Textile World 100*, 138 (Sept. 1950).

A new automatic screen printing machine prints 10 colors at 260-300 yd. per. hr. cloth is fed to the machine from a roll and is secured to a rubber apron which carries the fabric through printing and drying. Each color is dried by infrared bulbs before the next color is printed. During operation in England, the machine produced prints at 0.164 pence per yard as compared to a cost of 2.9 pence per yard for hand-printed fabrics. Mfr. agent: Maurice Godfrey, Oceana Imports, Inc., 417 5th Ave., New York 16, N. Y.

Spring holder for dye tubes. Anon. *Rayon & Syn. Tex. 31*, 136 (Sept. 1950).

Ball-bearing spring holders for 1⅝" dye tubes now available for first time. Mfr. Foster Machine Co., Westfield, Mass.

Staple rayon hank dyeing. Franz Zons. *Kunstseide Und Zellwolle 28*, 121-4 (1950).

Package dyeing of staple rayon with different dyes under various conditions is discussed.

Stripping of wool dyes with protection against chemical damage. E. A. Leonard, & L. Beck. AATCC paper, *Am. Dyestuff Reptr. 39*, P595 (Sept. 18, 1950).

Stripping of dyes from wool may be done without chemical degradation. The efficiency of the new procedure is demonstrated by data on wool fiber strength, alkali solubility, and abrasion tests on pile floor coverings. Method calls for splitting

the disulfide lindages, and rebuilding them with ethylene dibromide.

Studies in textile printing: I. Evaluation methods and terminology. F. Fordemwalt and C. R. Witschonke. *Am. Dyestuff Reptr. 39,* 607-9 (Sept. 4, 1950).

Proposes uniform terminology for use in evaluating vat prints. "Percent fixation" to indicate what percentage of applied dye that becomes permanently fixed. "Color efficiency" to express the relativ effectiveness of the fixed dye in coloring the fabric. "Printing efficiency" to measure the overall economics of the printing process.

Textile printing. Ira L. Griffin, Dave E. Truax & Norman H. Nuttall (to Stein, Hall & Co., Inc.) Can. P. 467 932, Sept. 5, 1950.

In printing of textile materials the steps which comprise printing on the textile material with a printing paste comprising a dispersion of a water insoluble pigment, a water dispersed film forming carbohydrate material of the type hydrolyzable by acids to simpler molecular compounds and a water soluble pyroantimonate, the proportion of pyroantimonate being within the range of about 0.25 per cent to about 25 per cent based on the weight of the film forming substance and within the range of about 1 per cent to about 20 per cent by weight of the pigment, and drying the resultant printed material.

The action of light on textiles. R. Dicker. *Rayonne 6,* No. 8, 85, 87, 89, 90 (Aug. 1950); *in French.*

An investigation on the action of light on bright viscose rayon, cotton, silk, and dull nylon which had been dyed with vat dyes at 0 and 100% R.H., the anthraquimone dyes are particularly active on silk and nylon, but less so on viscose and cotton. At 0% R.H. the effect on viscose, silk and cotton is much less than on nylon.

Vat dyestuffs for wool. H. Lutringhaus. *Am. Wool Cotton Reptr. 64,* 18-19, 23, (Sept. 21, 1950).

Formulas and methods for wool dyeing are discussed, and an analysis of results obtained with various applications is set forth in this resume of a discussion of vat dyes for wool.

Vat-dyed process. J. Arnold Heydler and G. N. Sandor. *Textil-Rundschau 5,* 179-86, (1950); *in German.*

Vat-acid process compared with pigment-pad, indigo-sol, and vat-dyeing methods. Preparation

of vat acids are described: vat dye is brought to a pH of about 5 by means of AcOH and an acid-stable dispersing agent.

SPECIAL FINISHING F

Application of moth-resistant treatments. I. C. H. Bayley, *Textile Age 14,* 22-5 (Sept. 1950).

The work of Canadian defense services in attacking the problem of damage to fabrics by clothes moths and carpet beetles is outlined. Included in Part I of this outline are: larva tests, rating the extent of damage, chemical assay methods for permanent type proofers, tests for permanence, and laboratory application of compounds. (cont).

Brighteners. H. B. Hass. *Rayon & Syn. Tex. 31,* 115-118 (Sept. 1950).

Flourescent pigments and brighteners are described historically, by specification, and by physical and chemical structure. Mfr. General Aniline & Film Corp.

Finishing agents. Hydroxyethlcellulose and its uses. W. E. Gloor, B. H. Mahlman & R. D. Ullrich. *Ind. Eng. Chemistry 42,* 2150-53 (Oct. 1950).

Composition and properties of alkali-soluble hydroxyethylcellulose (HEC) are discussed, and 63 papers on HEC uses are briefly reviewed. Textile applications covered are coatings, finishes and dressings, yarn sizes, book cloth coatings, filling open weaves, adhesives, tracing and other transparent cloth, filling the back of pile fabrics, and waterproofing fabrics. In addition to these, formation of HEC filaments and use of HEC in viscose manufacture are of possible interest to textile manufacturers.

Flame proofing. New compound flameproofs fabrics. Anon. *Safety Eng. 100,* 25-26 (Sept. 1950).

A compound has been developed by an unnamed chemical company which will flameproof cotton and other textiles without impairing color or pliability, will withstand repeated launderings and even enhances shrink-and mildew-resistance. Tests with sparks and splashes of molten metal at Jones & Laughlin Steel Corp. have proved its effectiveness and durability.

Mercerization of piece goods. I. Cotton fabrics containing rayon. A. J. Hall. *Fibres 11,* 323-325 (Sept. 1950).

A method for mercerizing cotton-acetate rayon mixtures using cold alkali and prompt acidifica-

tion is described.

Method of treating fibrous cellulosic materials to impart flame resistance thereto, compositions therefor, and products thereof. Anne MacMillan Loukomsky, Roy H. Kienle & Theodore F. Cooke (to American Cyanamid Co.) USP 2 520 103, Aug. 22, 1950.

Various compounds and compositions have been used or suggested for use as agents for treating fibrous cellulosic and other normally flammable organic materials in order to render them resistant to flame. Agents or treatments for imparting flame resistance to normally flammable organic materials properly may be classified as (1) temporary, (2) semi-durable and (3) permanent or durable, based on their durability in providing continued resistance of the treated textile or other material to flame during use. The durable treatments heretofore used or suggested have been of three general kinds or types: (1) Urea-phosphate type. (2) Double-bath precipitation type. (3) Metallic oxide-chlorinated body type.

The present invention is based on our discovery that fibrous cellulosic materials including those composed solely or comprised mainly (that is, preponderantly by weight) of fibers of natural cellulose (that is, cellulosic materials of natural origin), regenerated cellulose (more particularly viscose rayons) and mixtures thereof can be rendered substantially permanently resistant to flame by suitably treating them with compositions of the kind hereinafter described. Our treated fibrous cellulosic textiles in thread, yarn, fabric or other form are unique in that they are characterized not only by their substantially permanent flame resistance but also by their improved hand or feeling to the touch as compared with the hand of textiles that have been given a double-bath precipitation or a metallic oxide-chlorinated body type of treatment, thereby increasing the field of utility of flame-resistance but also by their improved hand or feeling to the touch as compared with the hand of textiles that have been given a double-bath precipitation or a metallic oxide-chlorinated body type of treatment, thereby increasing the field of utility of flame-resistant textiles. Furthermore, these properties are obtained without excessive tendering of the textile, the treated textile in general having a tensile strength (average of the sum of the tensile strength of the warp and filling) of at least 80% of that of the untreated textile when similarly tested for tensile strength, and in many cases a tensile strength which is even higher than that of the untreated textile.

This example illustrates the preparation and use of a single-bath or "pad liquor" in carrying the present invention into effect.

Preparation of a dispersion of antimony trioxide. A small amount of dispersing agent, more particularly 13 parts of the sodium salt of a condensation product of formaldehyde and a naphthalene sulfonic acid (Tamol P) is dissolved in 577 parts of water. Under rapid stirring with a homogenizing type of mixer, 410 parts of finely divided antimony trioxide is added to the solution. The resulting dispersion is then passed through a colloid mill to reduce the average particle size to 1 micron or less.

Preparation of pad liquor. A typical formula for the preparation of the pad liquor is as follows:

	Parts
Monoguanidine phosphate	290
Cyanamide	145
Hexamethylene tetramine	20
Water	318
Antimony oxide dispersion (prepared as described above)	136
Aqueous dispersion containing 55-56% by weight of an unplasticized vinyl chloride copolymer containing between 80 and 95% by weight of vinyl chloride in the copolymer	91

The monoguanidine phosphate, cyanamide and hexamethylene tetramine are added to the water and dissolved therein by heating at 40°-50° C. The aqueous dispersion of the antimony trioxide is added to the aqueous dispersion of the vinyl chloride copolymer, and are thoroughly mixed together. (The aqueous dispersion of the vinyl chloride copolymer may be, and preferably is, the product which is available from the B. F. Goodrich Chemical Company, Akron, Ohio, under the trade name of "Geon Latex X-15.") The resulting dispersion is added to the solution of the other ingredients, and the mass is well mixed to form a substantially homogeneous liquid composition which constitutes the pad liquor. A pad liquor prepared in this manner had a pH of 4.7. The vinyl chloride copolymer used in the above aqueous dispersion and in dispersions referred to in other examples which follow, may be, for example, a copolymer of, by weight, about 80% to about 95%, e.g., about 85 to 90%, of vinyl chloride and about 20% to about 5%, e.g., about 15 to 10%, of an alkyl and acrylate, more particularly a lower alkyl acrylate such, for instance, as methyl, ethyl, propyl or butyl acrylate.

Treatment of fabrics. A cellulosic fabric such,

for example, as cotton cloth or a viscose rayon fabric is immersed in the pad liquor and immediately passed through two rubber squeeze rolls, the pressure being adjusted so that the so-called "wet pick-up" of pad liquor by the fabric is approximately 120% by weight of the dry, untreated fabric. After drying the untreated fabric, e.g., by heating at 60°-70° C., the dried fabric is heated at 160° C. for from 10 to 15 minutes. Thereafter the fabric is rinsed well in water to remove residual water-soluble substances therefrom, and again is dried (for instance at about 60°-70° C.)

Eighty square cotton fabric treated as above described had a dry add-on of 32% by weight of the dry, untreated fabric. The results of vertical flame tests of this fabric were as follows: 3 inch char length after 1 and 5 washes, respectively, and 0 and 4 seconds after-glow after 1 and 5 washes, respectively.

Method for glazing braided cord. Anon. *Textile Industries 114,* 122-124 (Oct. 1950).

A glazed finish on braided cord is produced by unique manufacturing practices at Georgia Twine and Cordage Co., Forsyth, Ga. Polishing rolls on the glazing machine are covered with ⅜ in.-diam. cocoa-fiber rope. Rolls are 18, 10, and 6 in. in diameter respectively. Machines are driven by 15 hp motors, and 50 yds. of cord per minute are produced. Infrared drying, sizebox processing, and winding and inspection are described briefly.

Modern chintz finish. Konrad Quartal and Kurt Beideck. *Textil-Praxis,* 29-31 (1950); *in English-Spanish.*

Production of washable chintz finishes with resistance to cracking, and with varying degrees of stiffness is now possible with plastic dispersions.

Mothproofing-detergent combinations. H. C. Borghetty, Opal Sherburne, Winifred Pardey. AATCC paper, *Am. Dyestuff Reptr. 39,* P595 (Sept. 18, 1950).

The market gain of synthetic fibers at the expense of wool may be avoided by the use of mothproofing agents. A substantial cationic mothproofing agent is combined with non-ionic synthetic detergents to serve as mothproofing and washing agents. Can be applied at the mill or in the household.

Relative efficiency of "saturant" bitumen as a textile rotproofing agent. W. G. Atkins, S. R. Sen Gupta, & W. G. Macmillan., *J. Soc. Chem.*

Industry 69, 61-64 (Feb. 1950).

Resin treatment strengthens nylon parachute webbing. II. Anon. *Textile Age 14,* 26 (Sept. 1950).

Nylon webbing used in parachute harness is being treated with Merlon-BR, polyvinyl-butynal resin. The resin does not penetrate the fibers, but acts more like an adhesive and keeps them from becoming separated and prevents fraying. The treated webbing outlasts the untreated type by 3 times in wearing.

See nylon absorbs water instantly. William A. Newell. *Textile World 100,* 118-119, 316 (Sept. 1950).

Hans Bick, Inc., Reading, Pa., buys type-8 nylon in powder form, emulsifies it and make it water soluble, then applies it fabrics as a permanent finish. Called the Nylonizing process, it follows dyeing, makes the nylon garment soft, pliable, and warm, and enables the garment to absorb water instantly and to disperse it instantly.

Shrinkage control of viscose rayon fabrics. J. A. Woodruff. *Textile Mercury & Argus 123,* 421-22, 424, 427, 433 (Sept. 15, 1950).

Crease-resistant treatments are used also for shrinkage control, but newer methods are being developed. Five classes of treatment are cited: reactant, bonding, chemical modifiers, thermosetting resins, and compressive shrinkage. Examples of each class are discussed. References.

Soil-burial test. J. D. Dean. *Bibl. of Technical Reports, 14,* 118 (Sept. 15, 1950).

Soil contact tests were extensively employed to determine thee effectivenss of various proofing agents in protecting textiles against biological attack. The eight rotproofing treatments employed were comprised of four different copper soaps, the naphthenate, oleate, tallate, and resinate. The other treatments were Cu naphthenate-creosote, cuprammonium sulfate-creosote, cuprammonium carbonate, and Cu Amm fluoride.

Titanium as an agent for imparting durable fire retardancy to fabrics. A. E. Jacobsen, W. F. Sullivan & I. M. Panik. AATCC paper, *Am. Dyestuff Reptr. 39,* P595 (Sept. 18, 1950). See front section.

TESTING AND MEASUREMENTS G

Clothing and fabrics G 1

Calculate with confidence your rayon fabric

strength. Rene Bouvet. *Textile World 100,* 131, 133, 208, 210 (Oct. 1950).

Among other factors contributing to rayon-fabric strength, the following important ones are reviewed: type of yarn used, inherent stretchability of individual yarns, amount of twist in yarn, number of ends in one inch of cloth, relative humidity of yarn and fabric. Highlights of article: (1) spun rayon yarns are about 80% as strong as equivalent-size filament yarns, and in finer counts the ratio drops to as low as 50%. (2) Not more than 4/10 of 1% of gram-per-denier tension can be applied to rayon yarn without damaging it.

Effect of weather on bleached and unbleached cotton duck. J. D. Dean, W. N. Berard & R. K. Worner. *Textile Research J. 20,* 643-48 (Sept. 1950).

Gray cloth showed more breaking-strength loss than bleached in weather tests. Other factors compared: pH, average fluidity increase, and copper number during exposure.

Fabric-base plastics. K. W. Pepper & J. R. Riddell. *J. Soc. Chem. Ind. 69,* 195-201 (July 1950).

The strength of laminated plastics derives mainly from the fibrous reinforcement, but the fibers, being arranged in layers, cannot contribute to the interlaminar strength. The consequent weakness is revealed by a low cross-tensile strength and a low shear strength parallel to the laminations. Three methods of test which have been used with laminates ¼" thick are described and compared; with material greater than ¾" in thickness, two additional tests may be employed. Interlaminar strength, in common with other properties of reinforced plastics, is sensitive to variations in the moisture content of the impregnated reinforcement at the time of pressing. The beneficial effects of desizing and scouring are conclusively proved. While the scouring process used does not appear to be highly critical, desizing by itself is not an adequate pre-treatment. Absence of twist in the threads of a fabric does not contribute to higher interlaminar strength.

Fielden introduces new moisture meter. Anon. *Textile World 100,* 150 (Oct. 1950).

A compact electronic device known as the "Moistektor" gives a continuous indication of moisture level in fabrics. Mfr. Fielden.

Fighter plane shelter cloth. Anon. *Textile Industries 114,* 89 (Oct. 1950).

Weatherproof, easily erectable shelters for fighter planes are being made by General Textile Mills.

Mainly for frigid climates, the shelters withstand 70 mph winds, and snow loads of 30 lb. per sq. ft. Shelters have no internal supports or obstructions, being held together by four aluminum poles and five roof trusses. Glass cloth insulates the inner lining; vinyl-coated fabric reflects heat and light on the exterior.

Measure up your quality-control lab. Dame S. Hamby. *Textile World 100,* 120-121, 123, (Sept. 1950).

A survey of laboratory and quality-control setups in fifteen mills showing what tests are conducted, how and upon what machine or instrument the tests are made. 10 questions on details of laboratory organization are answered by the mills; tables of test routines are classified into mills producing lightweight fabrics, heavy fabrics, light yarns and sales yarn, and heavy and industrial yarns.

Measurement of fabric wrinkling. H. H. Hebeler & H. J. Kolb. *Textile Research J. 20,* 650-53 (Sept. 1950).

Analysis of wrinkle resistance and recovery of fabrics was done by means of a new machine, the Wrinklometer. Mfr: E. I. duPont de Nemours & Co.

Soiling tendency test for textile fabrics. Jean Henno and Robert Jouhet. *Bull. Inst. Textile de France, 17,* 63-5 (1950); *Brit. Cotton Ind. Res. Assoc. 30,* 354 (1950).

A method for soiling fabrics under controlled conditions and the evaluation of soiling is suggested. Dust is deposited on the sample by means of a carefully regulated sample of air. The amount of dust retained (that remaining after the excess has been shaken off) is determined photometrically by comparison with a sample of the original clean fabric.

Use of the stroboscope. Bruno Ritchter. *Melliand Textilber. 31,* 424-426 (June 1950); *in German.*

In order to obtain good results when observing a web of cloth with a flash stroboscope, it is necessary to make allowance for the properties of the human eye (flicker effect, fusion frequency) and the brightness of the room in relation to that of the stroboscopic image. These factors give the speeds of the web of cloth as a function of the number of repeats. The article describes the equipment of the apparatus with its automatic control of the flash sequence depending on the number of repeats per second, as well as the switch over to steady illumination

when the flicker effect sets in. When illumination is effected by mercury vapour flash lamps, a change takes place only in the case of red colors; color boundaries could be well observed.

Worsted mill laboratory. Carl E. Meede & Palmer E. Morally. AATCC paper, *Am. Dyestuff Reptr. 39,* P596 (Sept. 18, 1950).

Many more chemical and physical tests are being made in the worsted mill laboratory than heretofore. Dye fastness problems in blends are overcome under laboratory control. Microscopy, electrometric apparatus, and physical testing are important means by which the mill laboratory obtains analytical data.

Instruments and instrumentation G 2

Airflow method of measuring the specific surface of jute. M. M. Roy, R. R. Mukherjee & M. K. Sen, *J. Tex. Inst. 41,* P 249-254 (July, 1950).

An airflow method of measuring the specific surface of jute is described. Results obtained by this method are compared to both microscopic and gravimetric results. It is concluded that the airflow method because of its simplicity and ease of operation appears to be suitable for application to jute.

Control of the dyebath by means of spectrophotometric measurements. H. R. Davidson & I. H. Godlove. *Am. Dyestuff Reptr. 39,* 628-630 (Sept. 18, 1950).

A method to correct the dyebath to a standard concentration of components. Simple measurements on the spectrophotometer and calculations are the means recommended.

CSI-Stoll quartermaster wear tester. Anon. *Rayon & Syn. Tex. 31,* 136-37 (Sept. 1950).

New wear tester measures flat abrasion, edge abrasion, and flex abrasion of fabrics, fabric clamped over rubber diaphram, and the end of abrasion is automatically determined by electrical contact between abrasion head and the counter pin in center of diaphram. Weight varied by quarter pound increments, from zero through five pounds. Designed from specifications of Office of Quartermaster General, and known as CSI-Stoll Quartermaster Universal Wear Tester. Now used by 14 mills. Mfr: Custom Scientific Instruments, Inc., Arlington, N. J.

Here's a mill man's lab. W. A. Thomason, Jr. *Textile World, 100,* 89-91 (Oct. 1950).

This article answers the question whether a lab can be of real help to the manufacturing division of a mill and describes the testing routine of Durham (N.C.) Division Laboratory of Erwin

Cotton Mills. A fiber sample is taken from each bale each day, and tested for fineness (on Sheffield Micronaire) for strength (Pressley), and for waste content (Shirley Analyzer). (However, classer's lengths are used to great extent.) Other highlights of Erwin's system of testing: (1) laps are checked for moisture regain (Brabender tester) and for waste removed by the Shirley Analyzer; (2) nep-count tests on card, and uniformity tests periodically on sliver, roving, and yarn; (3) usual tests for weights and strength for all processes. Interesting sidelight: Erwin installed by-passes around each machine in opening line in order to reduce, wherever possible, the amount of "beating" and processing of fiber. Stocks that are "openable" by minimum beating may now be by-passed around any machine.

Detergency comparator. Anon. *Textile Industries 114,* 163-64 (Oct. 1950).

A new, stainless-steel machine will compare detergents for wool under conditions of high concentration and low bath ratio. Built like a pair of laboratory size dolly washers, the assembly has 3 in. diam. by 2 in. face, rubber-covered rolls, thermotstatic control, an electrically heated outer water bath that may be circulated by means of an electric pump, and two suds boxes that are provided with tilting-type drains to permit the drawing-off of accumulated liquor into either the testing tank or the waste line. Mfr: Riggs & Lombard, Inc.

Historical Background of abrasion testing. Margaret Harris Zook. *Am. Dyestuff Reptr. 39,* 625-627 (Sept. 18, 1950).

A brief summary of previous investigation and studies of methods of testing textile fabrics for resistance to abrasion. 27 references.

New approach to the evaluation of wool oils for resistance to oxidation in storage. *Am. Dyestuff Reptr. 39,* 633-635 (Sept. 18, 1950).

Recommends a better test method for evaluating wool oils in respect to aging characteristics and not to evaluate individual wool oils. Does not recommend Fade-Ometer test for usual run of wool oils.

New pressure recording instrument. Anon. *Textile Recorder 68,* 142 (Sept. 1950).

New instrument called the "Manograph" uses the principle of the manometer to record fluctuations in pressure. Mfr: Fielden Ltd., Wythenshawe, Manchester, England.

Process control. Continuous viscosity controller. Anon. *Westinghouse Engineer 10,* 224 (Sept. 1950).

A continuous viscosity controller, developed by the Materials Engineering Department of Westinghouse may find application in handling of textile sizes. Basing its measurements on pressure drop of liquid flowing in a capillary tube, it can actuate pneumatically any desired type of controller.

Radioactive thickness age measures sliver of lap irregularity. Anon. *Textile World 100*, 156 (Oct. 1950).

Variation in weight per unit length of laps or sliver can be detected by intensity of beta rays, by means of a new electronic instrument which is said also to be a correcting control usable for making machine adjustments to improve uniformity. Mfr: Baldwin Instrument Co., Ltd., Brookland Works, Dartfort, Kent, England.

Rayon yarn load elongation determination apparatus. Jean Henno and Robert Jouhet. *Bull. Inst. Textile de France, 17*, 59-62 (1950); *Brit. Cotton Ind. Res. Assoc. 30*, 353 (1950).

A brief description is given of an apparatus for the determination of load elongation relations for viscose and acetate rayon, and natural silk yarns. The apparatus is contained in a watertight enclosure in which relative humidities down to zero can be established.

Spinning tests on micro samples of cotton. V. V. Gupte, Harirao Navkal, D. L. Sen. *Indian Central Cotton Committee Tech. Lab. 45*, 1-8 (Feb. 1950).

A system for micro-spinning small amounts of cotton in the laboratory for test purpose. Describes method of hand opening, hand forming of a cotton lap (60 gms. of cotton, lap one yard long and six inches wide), and running the lap through the card, followed by drawing, roving, and spinning.

Viscosity control. Austin Norcross. *Rayon & Syn. Tex. 31*, 67-68, 132 (Sept. 1950).

Describes applications of viscometer for measuring viscosity of size during rayon warp sizing and single-end sizing. Mfr. Norcross Corp.

TEXTILE MILLS H

Acicular cast iron in textile machinery. Anon. *Textile Mfr. 76*, 436-7 (Sept. 1950).

Adoption of nickel-molybdenum acicular cast-iron for the picking shaft and components on the Picanol automatic loom is claimed to have virtually eliminated breakage in service.

Artificial light used for classing cotton. E. Dalton White. *Textile World 100*, 139, 216, 218, 220 (Oct. 1950).

Linen Thread Co. uses artificial light instead of northern daylight in cotton-classing room. Fixtures contain six 1000-watt Mazda lamps with filter glass covers. Air blowers are attached to the Macbeth light units to circulate air and reduce radiant temperature.

Automatic heat control sprinkler head. Glen H. Cameron. USP 2 523 355, Sept. 26, 1950.

A sprinkler apparatus comprising a bonnet having a platform therein, an inlet engageable with a liquid source of supply detachable valve means associated with the inlet, means extending through the platform for actuating the valve means at a predetermined temperature, the valve actuation means including a sleeve associated with the bonnet, a groove in the sleeve and a shank adjustably secured to the sleeve, arms pivoted to the bonnet, one of which is engageable in the slot, fusible means for retaining the arms in a predetermined position, means seated on the platform for resiliently biasing the sleeve, and the shank engaging the detachable valve means.

Aw, rats! Anon. *Textile Industries 114*, 97-9 (Oct. 1950).

One mill superintendent estimated that about $10,000 annual damage resulted from depredations of rats in mill. Control experts were called in; damage was practically eliminated. Rat control survey from nine mills showed that methods ranged from rat-traps and poison to complete, outside exterminator service.

Efficiency and cleanliness in new power plant. Anon. *Textile Mfr. 76*, 424-5 (Sept. 1950).

Four Babcock and Wilcox, W. I. F. type boilers, capable of generating 25,000 lb. of steam per hour at 250 lb./in. working pressure are the features of Bleakley Ltd's power plant at Prestwich, Manchester.

Fiber-converting plant—Collins and Aikman's Norwood mill. Anon. *Textile World 100*, 106-111 (Oct. 1950). See front section.

Fluid drives valuable on textile machinery. E. H. Helliwell. *Textile World 100*, 133, 302, 304 (Sept. 1950).

Power transmission by fluid drive may be called fluid drives, hydraulic clutches, fluid couplings, or other names. Essentially, they are one and the same. Their principles and characteristics are described. Such factors as favor application to textile machinery (smooth starting, elimination of strain caused by sudden starting, elimina-

tion of shafting, pulleys, belts, etc.) are outlined.

Great Southern Exposition. Anon. *Am. Wool Cotton Reptr. 64,* 13, 65, 67, 69, 71, 73, 75, 77, 79, 81, 83, 85, 87, 89, 91, 93, 95, 97, 99, 101 Sept. 21, 1950).

Notes on the Southern Textile Exposition to be held in Greenville, S. C., October 2 to 7 are presented together with a floor plan of the exhibits, alphabetical listings of exhibitors, and a directory of the exhibits.

High voltage control gear. Anon. *Textile Mfr. 76,* 439-441, 451 (Sept. 1950).

Use of high-voltage control gear in sub-station is reviewed.

How up-to-date is your plant? Anon. *Rayon & Syn. Tex. 31,* 125-128, 130, 132 (Sept. 1950).

A. C. and D. C. textile motors are contrasted. Maintenance, anti-friction bearings and lubrication progress are noted. Illumination, fire and accident prevention, employee training, mechanical, handling, air conditioning, and water requirements are other topics.

Hydraulic tailgate loader offered for pickup trucks. Anon. *Knitter 14,* 59 (Sept. 1950).

Hydraulic-powered lift capacity of 1,000 lbs. Mfr. Gar Wood Industries, Inc., Wayne, Mich.

Innovations in German loom construction. Hans Maier. *Textil-Praxis,* 15-26 (1950); *in English-Spanish.*

Several types of new German looms are described.

Instrumentation is part of modernization trend. III. Drew B. Daubert. *Textile Age 14,* 30-3 (Sept. 1950).

Instrumentation combined with other economies in yarn and fabric production can save time, space, effort, materials and money. Application of modern instruments in the textile industry as an aid to better processing is discussed.

Knitting mill employs mechanical handling to save time, labor and money. Geo. Ransom. *Textile Age 14,* 34-6 (Sept. 1950).

Handling installations at Fenimore Fabrics, Inc. are reported to have results in important economies. A close-clearance double girder Cleveland Tramrail crane with the trolley running on top handles shafts full of bobbins in the knitting room, and an overhead monorail carrier system handles single bobbins at the winding machines.

Label applying machine. Louis Oskow. USP 2 523 389, Sept. 26, 1950.

In an apparatus of the character described, a support on which an article to be labelled is rested, a plunger box located above the support, a plunger movable within the plunger box, a vertically slidable post carrying the plunger box to and from the support, guide means mounted on the support for vertically guiding the post, means for feeding a label strip into the box and in the path of the plunger whereby the plunger will shear successive albels from the strip, means for lowering the post to bring the plunger box carried thereby to rest against the suport, means for causing relative movement of the plunger in respect to the plunger box after the plunger box comes to rest upon the support, whereby a label severed by the plunger and in the plunger box will be pushed out of the box and pressed against an article resting upon the support.

Method of breaking emulsions to recover wool fat. Roy Shawcross. USP 2 522 140, Sept. 12, 1950.

The method of recovering wool grease from wool wash water which comprises contacting the wool wash water with pieces of solid ion exchange material comprising an insoluble, infusible sulfonated phenolic resin in its acid form thereby breaking the wash water emulsion and depositing the wool fat on the pieces of ion exchange material.

Mill construction and facilities. We built our plant around good working conditions—camera tour of Laros Textile Co., Kingston, Pa. *Factory Management & Maintenance 108,* 118-123 (Aug. 1950).

Well-captioned pictures show features of the Laros Textiles plant which include good lighting, filtered fresh air, good layout, snack room, lounge, and store for employees, water-cooled roof, and convenient parking lot and bus service facilities.

Mill illumination. Lighting for twisting elastic yarn. Anon. *Illuminating Engineering 45,* 505-6 (Aug. 1950).

Illumination installed for machines twisting elastic yarn at Fergus Perry (Philadelphia) is described and shown in two photographs and two diagrams. Three-lamp and two-lamp fluorescent luminaires were used to achieve 100 footcandles at a plane 30 inches above the floor.

Mill modernization features textile engineers meet. L. A. Runton, *Am. Wool Cotton Reptr. 64,* 15-16 (Sept. 28, 1950).

Details to consider in textile mill modernization are reviewed, and the application of the engineering approach to mill operation to find existing

weaknesses to develop corrective measures is discussed.

Mill of today. Robert Z. Walker. *Textile Bull. 76*, 102, 104, 106, 108 (Sept. 1950).

Part 21—Describes fundamentals of drawing.

Minimize downtime by stocking motor-renewal parts. William G. Hall. *Textile Industries 114*, 117-120 (Oct. 1950).

Stocking a complete supply of motor replacement units or essential components assures increased maintenance efficiency and decreased equipment downtime due to machine failure. Factors favorable to the stocking of motor renewal parts were cited as: downtime reduced; better repair results when parts are on hand and repair can be planned; production schedule protected; employee efficiency protected by less downtime, minimum delay; maintenance proceeds on a continuous basis, etc. Factors unfavorable to such stocking of parts: high investment in parts; maintaining stock control; lack of storage space.

Modernization in Europe. *The Textile Weekly 46*, 470, 472, 474, 476, 478 (Aug. 25, 1950).

Description of production equipment of two new European Mills.

New Air Filter. *Textile Industries 114*. Anon. 87 (Oct. 1950).

A new filter said to be 1,000 to 3,000 times as effective as conventional cleaning equipment has been developed for the Atomic Energy Commission by the engineering firm of Arthur D. Little, Inc., Cambridge, Mass. The air filter is said to be adaptable for textile mills' use. It is made of special paper and contains tiny asbestos fibers; single units can be built to handle 1000 cfm or can be small enough to handle air for compressed air lines.

Prevention of static at textile machines. G. H. Thompson. *Brit. Rayon and Silk J. 27*, 64 (Aug. 1950).

A pipe through which cold water is circulated is located just before the drawing heads. Water condensation on the pipe raises the humidity and thereby reduces static. B.P. 637 678.

Save money on your freight. Ernest W. Fair. *Natl. Canvas Goods Ffrs. Rev. 26*, 44 (Sept. 1950). See front section.

Sewing machines and textiles. William Bland. *Fibres 11*, 321-322 (Sept. 1950).

A brief description of the development of the sewing machine is given and various means of providing power to the machine cited.

Synthetic resins for protective coatings. *Can. Textile J. 67*, 26 (Sept. 15, 1950).

Nukemite, a new synthetic-resin coating, affords protection from severe corrosive conditions to metal, concrete, and wood surfaces exposed to chemical attack. Leak-proof, odorless, and noncontaminating. Mfr: Nukem Products Corp., Buffalo 20, N. Y.

The Harris plant. Anon. *Textile Age 14*, 18-21 (Sept. 1950).

The construction, equipment, etc. of the Harris mill and the housing facilities for its employees are described. The mill is designed for the production of a wide variety of fine filament rayons.

The Water Pollution Problem. Lyman Cox. AATCC paper. *Am. Dyestuff Reptr. 39*, P594 (Sept. 18, 1950).

Industrial waste rarely causes bacterial pollution, but may change the water quality. Water-protection methods now attempt to overcome existing pollution and to control new sources through measures that control these sources and require proper treatment from new and expanding industrial plants.

Industry's civic duty in pollution abatement is outlined as: (1) "to develop full information about its own waste and take necessary corrective action; (2) to educate its own employees; (3) to cooperate with municipal officials; (4) to cooperate with state, interstate, and federal agencies; (5) to keep the public advised concerning the problem and the progress which is being made."

It is imperative that the worker who pushes the button that dumps or spills the waste should understand the effects of his actions upon pollution.

16th Southern Textile Exposition. Anon. *Textile Age. 14*, 16-17, 62-79 (Sept. 1950).

A complete list of exhibitors with descriptions of many of the exhibits scheduled for the 16th Southern Textile Exposition to be held in Greenville, S. C., October 2-7 is given.

The milium story. George M. Jolly. *Rayon & Syn. Tex. 31*, 31-33 (Sept. 1950).

Fabrics produced by Deering, Milliken & Co. have new MILLIUM treatment which has remarkable warmth-retentive properties.

To get the most from air conditioning. Anon. *Textile World 100*, 116-117 (Oct. 1950).

Amazingly uniform air conditioning is obtained from system installed by Narricot Co. in new

plant. Radiant heating, insulation between heating coils and outside walls, and four-zoned temperature and humidity controls are Narricot features.

Unit air conditioning systems for textile mills. Leo Walter. *Textile Recorder 68*, 135-36 (Sept. 1950).

Recent installations of air-conditioning systems are described.

Visiting the Borden Mills. David Clark & David McKenzie Clark, Jr. *Textile Bull. 76*, 85-6, 8, 90 (Sept. 1950).

Borden Mills, Kingsport, Tenn., one of the outstanding examples of mill modernization and of ingenious materials handling in the industry.

Waste treatment in textile plants. Anon. *Textile Industries 114*, 193-194 (Oct. 1950). See front section.

Where can your mill use nylon plastic? Anon *Textile World 100*, 103-107 (Oct. 1950).

Mill uses for nylon plastic parts are reviewed, including saddle and cap bars, condensers, yarn guides, travelers, bearings, bolsters, and other parts.

Worumbo merchanizes its coal handling system. Oliver Moses, 3rd. *Textile Age 14*, 40-1 (Sept. 1950).

A description of a clean, compact mechanized coal handling system at the Worumbo Mfg. Co. is presented. The system includes a tile silo for coal storage and a 9-inch Redler system consisting of four separate, dust-tight units with interchangeable, conveying chain links. Mfr: Worumbo Mfg. Co.

CHEMISTRY AND PHYSICS OF MATERIALS I

Annual review of chemical materials for fibers. C. S. Grove, Jr., Joseph L. Vodonik & Robt. S. Casey. *Ind. and Eng. Chemistry*, 1983-86 (Oct. 1950).

This article reviews 1949-50 literature, notes newer fibers, and lists newer chemical treatments of yarns and fabrics. Flame-proofing or fire retarding, mildew or rotproofing, and water repellency were said to be the main efforts to improve the physical properties of natural and synthetic fibers.

Application of cellulose ethers to textiles on a laboratory scale. N. Lakshminarayanaiah. *AATT 5*, 173-81 (Sept. 1950).

The paper covers the chemistry of cellulose ethers, properties and uses of cellulose ethers, methods of preparation and application, the use of the laboratory as a means by which new cellulose ethers may be examined.

Cellulose glycolate in finishing. A. Foulon. *Kunstseide und Zellwolle 28*, 117 (1950).

The use of this cold water-sol. material (produced by Baerle) as a sizing is described. It can be blended with starch solns, and is resistant to alkalies and salts.

Cellulose quality determinations. Simplified viscosity test for cellulose. Anon. *Tech. News Bull. Natl. Bur. Standards 34*, 131-2 (Sept. 1950).

Modifications of the cuprammonium, briefly described, save time and labor without sacrifice of accuracy.

Composite products of rubber and textile material. Dunlop Rubber Co., Ltd. Indian P. 42 620 (through *J. Sci. Ind. Research (India)*).

Impregnating with rubber containing a hydroxy di or tri-arylmethane or their halogenerated derivatives.

Drying process in theory and practice. Heinrich Netz. *Textil-Praxis 5*, 11-15, (1950); *in German.*

The requirements of heat in the drying of textiles are presented by equaltions.

Efficiency measurement of detergents. Gilbert Marroc and J. P. Sisley. *Teintex 15*, 125-39 (1950); *Brit. Cotton Ind. Res. Assoc. 30*, 38 (July 31, 1950).

A fairly comprehensive survey is presented of recent developments in methods for the evaluation of detergency. Methods of soiling and washing the fabric samples are discussed. A new French laboratory washing machine designed by Marroc and known as the "Lavatomic" is briefly described and some results obtained with it on detergents based on alkylarlysulphonates are shown graphically.

Enzymatic digestion of protein fibers. Margaret Towell Goldsmith. *Textile Research J. 20*, 613-16 (Sept. 1950).

Describes method for the preparation digested to some extent all the protein fibers. It was less effective on wool and soybean.

Formation of precipitates in spun fibers. R. Haller. *Textil-Rundschau, 5*, 94-98, (1950); *in German.*

Methods of forming precipitates: impregnating with an aqueous solution of MnC12, swelling, washing, and fixing the inorganic pigment by adding diluted NaOH, and by oxidizing with Na perborate.

High efficiency laboratory fractionation. Part VI. O. G. Dixon. *J. Soc. Chem. Ind. 69*, 204-5 (July 1950).

In a high-efficiency laboratory fractionating column, the control of the temperature of the jacket is of considerable importance and the heat input may require frequent adjustment. A simple and relatively cheap automatic device is described which makes use of air thermometers as the temperature-sensitive elements. The pressure difference between two thermometers alters a mercury level and makes electrical contacts which switch the heater on or off by means of a relay.

High-efficiency laboratory fractionation. Part V. O. G. Dixon & H. R. Ronnebeck. *J. Soc. Chem. Ind. 69*, 202-4 (July 1950).

It is important that accurate control of operating variables should be maintained throughout a long batch fractionation. This can be best achieved in many distillations by automatic control. In the laboratory still and accessories described, automatic control is provided for the maintenance of adiabatic conditions in the fractionating column, the adjustment of reflux ratio to give optimum fractionation efficiency and the hourly changing of receivers in which distillate is collected. All these operations are controlled by a modified "Multelec" Temperature Recorder. This instrument also provides a record of the important temperatures and operations throughout the distillation.

Ion-exchange characteristics of chemically modified cotton fabrics. Carroll L. Hoffpauir & John D. Guthrie. *Textile Research J. 20*, 617-19 (Sept. 1950).

Several chemically modified cotton fabrics and their characteristics as anion and cation-exchangers have been evaluated.

Mechanical properties of high polymers as functions of the shape of distribution curve. V-controlled fractionation of cellulose acetate. Philip C. Scherer & R. B. Thompson. *Rayon & Syn. Tex. 31*, 69-70 (Sept. 1950).

Precisely controlled fractional precipitation of cellulose acetate may be brought about by proper choice of solvent-nonsolvent system and control of variables. Acetone was the best solvent; heptane was used as the nonsolvent. Three tables. 5 references.

Mercerization of cellulose by caustic soda. Edouard Calvet. *Mem. Services Chim. Etat 34*, 163-77 (1948); *Brit. Cotton Ind. Res. Assoc. 30*, 351 (1950).

Experimental details and results are reported of an investigation comprising: (1) a micro-calorimetric study of the fixation of soda by cellulose immersed in caustic soda solutions; (2) the determination of the heat of mercerization; (3) a calorimetric study of the reversibility of the phenomenon of mercerization and (4) an interferometric study of mercerization.

Micro-determination of acetyl groups. K. Kainz. *Mikrochimie 35*, 89-93 (Aug. 1950); *Brit. Cotton Ind. Res. Assoc. 30*, 385 (July 31, 1950).

In acetyl determinations the stage is usually reached when the acetic acid solution has to be boiled in an open flask to remove CO2 and SO2. Loss of acetic acid is avoided by hanging a cooling cone in the neck of the flask.

Physical-chemical measurements in cotton and linen textiles. K. Huber. *Textil-Rundschau 4*, 310-28, 431-42 (1949); *in German.*

New method for measuring the fluidity number. Cotton is classified in terms of degradation degree by means of fluidity number.

Polymerization. Chas. C. Winding. *Ind. and Eng. Chem. 42*, 1724-31 (Sept. 1950).

A review article covering the following subjects: 1) catalysts, activators, modifiers and inhibitors; 2) reaction mechanisms and kinetics; 3) ethenic polymers and copolymers; 4) elastomers; 5) condensation polymers and 6) processes, plants and equipment. 264 references.

Pure culture test methods. Paul D. Marsh. *Bibl. of Technical Reports, 14*, 117-18 (Sept. 15, 1950).

Pure culture test methods for fabric mildew-resistance tests are discussed and described together with various laboratory test organisms used. In inoculating test strips the pipette inoculating technique was used. Few organic compounds applied to 8-oz. duck at a level of 0.1% on the fabric will prevent the growth of Chaetomium globosum in a non-sterile pipette inoculam test. While many of the final answers to questions about pure culture tests are not yet at hand, it is felt that a background to data on pure fabric mildew preventives tested with pure cultures of fungi will serve as a guide to interpretation of laboratory tests with unknown compounds and to the controlling of mildewing of fabrics in the field.

Rapid micro-combustion analysis of organic nitrogen compounds. A. F. Colson. *Analyst 75*, 264-8 (1950); *Brit. Cotton Ind. Res. Assoc. 30*, 385 (July 31, 1950).

A modified Pregl-micro-Dumas method for the determination of nitrogen in organic substances is described that reduces the analysis time by at least one half.

Reaction of cellulose with alkalies. Genevieve Petitpas. *Mem. Services Chim. Etat 34*, 125-37 (1948); *Brit. Cotton Ind. Res. Assoc. 30*, 351 (1950).

The swelling of cellulose in caustic alkalies has been studied by the Vieweg and centrifugation methods. The results are compared with those obtained by other investigators and an attempt is made to interpret them by pointing out the role played by water and by referring to the structure of the alkali-celluloses obtained and to certain properties of the alkali solutions used (NaOH, KOH, and LiOH).

Tachometric titration. L. J. Edwards. *J. Soc. Chem. Ind. 69*, 193-5 (July 1950).

A method is described whereby viscosity changes in a system may be followed tachometrically. Changes of phase, gelling points and similar phenomena accompanied by sudden large changes in viscosity may be rapidly located. The technique is of wide application, especially in the field of colloid science; although it is empirical in nature, approximate values for absolute viscosities may be obtained, if desired, by calibration against standard liquids.

TEXTILE EDUCATION AND RESEARCH J

Orientation factors derived from dichroism and other parameters. J. M. Preston and P. C. Tsien. J. Soc. of Dyers and Cols. *66*, 361-65 (July 1950).

It is shown that an orientation factor can be derived from the dichroism of dyed fibres. Orientation factors, of certain regenerated cellulose fibres, derived by different methods are compared. Values are quoted for the orientation factors of the same fibres derived from polarized fluorescence, dichroism, birefringence, X-rays, and swelling anisotropy.

Knitting (circular), wrap patterning. Hemphill Co. Brit. P. 627 626, Aug. 12, 1949.

Method of knitting diagonal wrap pattern on

moving cylinder circular machine by periodically accelerating or retarding the wrap spindle in relation to the speed of rotation of the needle cylinder, so that wrap thread moves forward or back by one needle spacing. Wrap yarn is fed to 2 adjacent needles and cast off from the leading one, the body and wrap yarns being knitted together by the other needle.

YEARBOOK OF THE TEXTILE INSTITUTE, No. 2, 1949-50. Manchester, England, The Textile Institute. 258 p. Price: 10s.

. . . Sandardization is fully covered in the volume. Also included is a comprehensive list of textile terms and definitions, together with data and tables connected with yarn count systems, as well as standards relating to the determination of yarn count, the designation and determination of twist in yarns, moisture in relation to textile materials, humidity of the air, shrinkage on laundering, Bundesmann type water-repellency testing apparatus, method of testing water-repellency, measurement of cloth thickness, and determination of breaking load. The case for a universal system of yarn counts is discussed, and comparative tables of yarn equivalents are given. Other technical data included deals with the relation between pH, acidity and alkalinity and with the hardness of water. Comparative hydrometer scales; comparative temperatures, centigrade and fahrenheit; percentage table of common chemicals; temperature of saturated steam; conversion factors and physical constants are also given. . . . —*Can. Textile J.*

Role of fibers in archeology. J. L. Stoves. *Fibres 11*, 326-330 (Sept. 1950).

The finding of various garments made of different fibers has played an important role in providing clues to human actions in ancient civilizations.

Textile research at Clemson. William M. Kirby, Jr. *Bobbin & Beaker 8*, 15, 28-30 (Spring, 1950).

Resume of research projects: 1) a spinning device inserts twist between delivery roll and thread guide, reducing ends down and labor cost. 2) Constant rate let-off on loom designed to let off same amount of warp each pick. 3) Stroboscopic studies of loom. 4) An air-flow instrument is being experimented with as a means of measuring specific surface area of fibers. 5) Fiber-strength tester for flat bundles, using constant rate-of-loading. 6) The Boulin-Clemson "Pneumetric" Tensiometer now being marketed by Boulin Instrument Co. 7) Others on nylon fiber dyeing.

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A New Service To Digest Readers

(For new readers—A repeat of the announcement carried in November)

With this issue, DIGEST readers receive the same light on textile developments of the month, but no bushel to hide what we consider the more important ones. We have selected the features of technical literature for December, twenty of them from twelve different publication sources, and have printed them on the first six pages of the magazine.

You can read the digests of these twenty articles quickly. Thus, if your time for technical reading is limited, this special section of the DIGEST will simplify your task of keeping up with the principal technical developments of the month.

If you prefer the complete, pre-classified section as heretofore published, we hasten to add that your section is still complete and pre-classified. Every article digest in the front section also has a complete reader's reference in the regular, pre-classified section.

Fiber Control from New Drafting System---Bale Handling Saves 25 Percent Labor Cost---Reduced Waste Nets $150,000 Saving

NEW DRAFTING SYSTEM IMPROVES FIBER CONTROL

A new drafting device is designed to aid short and long fiber control during roll drafting in order to increase the speed and precision of drafting processes. Using flat circular discs, the system is said to lengthen the area of control between rolls, according to USP 2,522,332, by Edward J. Abbott, which is assigned to Abbott Machine Co., Wilton, N.H.

The disc system untwists the roving strand during drafting in order to facilitate the passage and drafting of all fibers. Yet, it also re-inserts a rolling twist just before the strand enters the front drafting rolls. The latter function is designed, among other things, to contain the short fibers within the strand.

Two flat discs are used by the system in the location normally occupied by aprons or carrier rolls. The discs extend almost from the nip of the back rolls to the nip of the front rolls. They lie flat, that is, parallel to and in the same plane with the roller beam.

The roving strand passes between and under the control of the two discs, which turn in opposite directions. The counter motions impart twist to the strand at a point calculated to permit free drafting of long fibers that may extend back from the bite of front rolls, yet designed also to compact all fibers together and to restrict them to the travel of the main bulk of roving.

The twist restrains the short fibers from splitting off from the roving strand, and the two discs deliver a consolidated roving to the front rolls. Consolidation of roving at the front rolls is said to reduce the tendency of fibers to split off from the drafted strand as the latter emerges from the front rolls.

The disc system is designed to overcome limitations in present drafting systems.

In conventional drafting (without aprons or carrier rolls), it is claimed that previously-applied twist becomes so slight during a later drafting process as to be ineffective in controlling short fibers. For this reason, it is said that aprons and carrier rolls are provided.

However, it is pointed out that apron and carrier-roll systems do not control the roving strand over the entire distance between a pair of drafting rolls. The locations of carrier rolls and aprons are such that a substantial gap exists between them and the drafting rolls. The sliver or roving has to cross this gap unconfined, and this constitutes an obstacle to attempts to increase the amount of drafting that can be practiced.

SIMPLE HEDDLE REPAIR METHOD CUTS LOOM DOWNTIME

A simplified method of repairing single heddles when they break during weaving is said to be much faster and less costly than present methods. It provides a "Lock-On" spare heddle head that requires only a pair of pliers for application, with no necessity for breaking warp ends or disturbing the warp.

The new method was devised when research showed that nearly all heddle failures occurred at the head and that usually the wire and heddle eye remained undamaged.

Now, when a heddle breaks, the broken end loop is snapped off with a pair of pliers. The end of the heddle shaft is inserted into the spare "Lock-On" head, the head is secured to the shaft, and the loop is slipped over the heddle rod.

The loom is ready to start in one-third the time taken by former methods.

Tests showed that former methods required an average of five minutes heddle-replacement time on 80-pick cloth running 184 ppm. The loss during downtime was 920 picks, or 11.5 inches of cloth.

The new method required one-third of that replacement time. The downtime loss was 307 picks, or 3.8 inches of cloth. Approximately 613 picks, or 7.7 inches of cloth were gained by the new replacement method. Mfr: Walker Mfg. Co., Philadelphia, Pa. (*Textile Mercury & Argus*, Sept. 29, 1950).

HOW JOANNA REDUCED WASTE—A STORY OF SUPERVISOR-EMPLOYEE COOPERATION

Waste control at Joanna Mills, Joanna, S. C., is a mill-wide effort in reduction and control, instead of a sporadic campaign in reduction of certain waste classes. Total savings from Joanna's method will run about $150,000 this year. The savings were not made by the manager and superintendent, but by departmental supervisors, their assistants, and employees working in harmonious cooperation.

Jumping-off point for Joanna's campaign was a conference between supervisors and members of an engineering firm, which specialized in textile waste control. During a series of waste conferences, Joanna's supervisors obtained data on waste-control methods. Each supervisor had at least one problem of his own on which to work.

Savings were made in nearly all classes of cotton-mill wastes. The savings from defective-filling reduction was obtained from methods that may be lucrative starting-points for other mills. Weekly bad filling poundage dropped from more than 4,000 to about 600 lb. Labor savings in the handling of bad filling was about $14,000 per year.

Here's how Joanna put the accent on good filling:

1. Section men were required to check builders weekly on each frame to reduce "jump-up" bobbins.
2. Doffers were required to clean spindles regularly.
3. Spinners were required to "flag" quicker.
4. The weave room returned bad filling to the proper shift in the spinning room.
5. The spinning room weighed bad filling and kept records on it.
6. The spinning room was required to examine and separate bad filling for rewinding.
7. The system of using filling bobbins as loom "flags" was discontinued, thus reducing dirty, greasy, and scuffed filling.
8. Battery fillers were trained to handle only three quills at a time, in order to minimize the dropping of quills onto floor. Battery fillers were also required to pick up dropped quills immediately.
9. Bad filling was collected by assistant overseer's section, then posted to waste records.
10. An article on reducing bad and oily filling was published in the company's magazine.
11. Specialized training was given oilers, cloth doffers, fixers, and blow-off men in reducing oil and grease on the floor.
12. A system of inspection was provided for mechanical maintenance of quillers.
13. Mill discontinued the use of filling boxes for hauling loom parts.
14. Damaged filling boxes were repaired; slatted bottoms were placed in filling boxes. These bottoms prevented the accumulation of dirt, especially when filling was conditioned and boxes were damp.
15. Closer supervision was maintained over filling conditioning. The equipment and operative were frequently overloaded.
16. Chutes were placed in the filling bins in order to reduce the manual handling of filling.
17. Looms were checked to reduce knocking-out pieces.
18. Oil-impregnated bushings were placed in the battery spindle bearing to eliminate oil at that point.
19. Guards were fixed over gears that might sling oil.
20. Employees were kept up-to-date on the cost of waste filling, and how it affected their bonus.
21. As bad and oily filling were reduced, the number of operatives required to rewind bad and oily filling was reduced from an original total of 9 to 2 operatives. Savings: $14,000 annually in the handling of bad and oily filling. (*Textile Industries*, Nov. 1950).

CANVAS AND HEAVY FABRICS MADE FIREPROOF AND WATER-REPELLENT IN SAME TREATMENT

A British survey of Germany's heavy textile-proofing industry reveals interesting but inconclusive data on combining fireproof and water-repellent finishes. The German firms use mainly the I. G. Akaustan products in fireproofing canvas. These products are usually water-soluble ammonium salts.

One type, however, is of special interest because it produces a water-insoluble fireproofing effect. Its name is Akaustan S. It is combined with Persistrol, another trade-name product, to produce a combined fireproof and water-repellent finish.

The British report states that this German practice is the only known method of obtaining combined proofing effects without interfering with the ventility of the cloth. They report also that there were varying opinions on the type of fiber to which the finishes could be applied. The mill firm of H. Windel said that the proofing agents had no adverse effect on cotton cloths, but one authority said that the finishing agents were not suitable for cellulosic fibers because they engendered acid tendering. (*Textile Journal of Australia*, Aug. 21, 1950).

GET THE MOST FOR YOUR MONEY BY CORDWOOD PILING OF COTTON BALES

The right kind of approach to cotton bale handling can save the mill money. For example, a simple bit of research into the method of bale piling saved 25 percent of direct labor.

The mill used a fork truck and boom attachment to handle the bales. Yet, they were still paying 25 percent more than necessary in direct labor. Their method required a truck operator and three men. Two of the men worked at floor

levels, the third was required only for the handling of bales that went to the two top-most layers of the stack.

The two men stacked bales #1, 2, and 3 vertically, while the top man merely waited to guide bales #4 and 5 into position.

Under the new method, only bales #1, 2, and 3 are stacked vertically. Then, a new pile is started, thus eliminating the waiting time of the top man. When available space is covered with 3-bale stacks, one of the two floor-level helpers goes to the top of the stack, and bales #4 and 5 are placed into position. (*Modern Materials Handling*, Sept. 1950).

SIMPLE CHECK FOR RADIOACTIVITY DEVELOPED FOR CIVILIAN DEFENSE

The extent of human exposure to atomic radiation can now be measured by a new, lightweight device that hangs around one's neck like a soldier's dog-tag, yet measures very slight to fatal doses of radioactivity.

The new device—called a "dosimeter"—is the first simple and inexpensive method capable of mass production for both military and civil defense needs. It was designed by the Army Signal Corps. It permits a reading that can be taken one minute after exposure and needs no laboratory or other equipment.

It works on a photographic principle and consists of a small metal case that contains a flat paper package. The package holds a photographically sensitized film and a pod of developing solution.

Exposure to gamma radiation causes the unexposed center strip of the film to turn white. The greater the exposure, the whiter the strip. By comparing the exposure with a graded scale on the edges of the film, the individual can obtain a good measure of the dosage of radiation received. A special shield blocks out alpha and beta rays, since gamma rays are the ones to be reckoned with in an atomic explosion.

When an individual suspects that he has been exposed to dangerous radiation, he merely pulls a tab from the case. The tab is attached to the film, which is removed. As the film passes through a narrow slit in the case, it breaks the pod containing the photographic developing fluid, and spreads the chemicals over the test strip and scale inside the film. The user waits one minute, then breaks open the film plaque, examines the test strip and scale, and learns the extent of his exposure.

Large quantities of the devices will not be available for six months, but the dosimeters can be made for less than a dollar and can be used repeatedly. Extra film plaques will cost about five cents, and can be inserted in the case after each exposure. The dosimeter was developed under the sponsorship of the Signal Corps Engineering Laboratory, Fort Monmouth, New Jersey, by the Polaroid Corporation, Cambridge, Mass., using the principles of Polaroid's Land camera. (Department of Defense Release No. 1403-50).

DYNEL RUNS ON THE COTTON SYSTEM

Heavier deniers of the new dynel synthetic staple are processed on conventional cotton machinery, with little change in technical layout, but 2.0-denier staple may require some changes in carding. Single-process pickers, with no special opener such as a Buckley or vertical opener, will prepare the staple for carding. Kirschner beaters operate at 1200-1500 rpm.

Other technical details in handling dynel at the picker: beater speeds are determined from beats per poundage of staple, which will range from 1000 to 3000; fans run at 1400 rpm., with dampers open more than for rayon; grid bars are covered on back and middle beaters; lap markers are installed back of calendar rolls; high calendar-roll pressure is maintained; and tapered lap pins are covered with paper tubes to simplify the withdrawal of the pins.

Revolving flat top cards, with or without fancies, are operated on the same principles as those that govern rayon and cotton processing. They produce a 55-gr. sliver, at 11 to 12 lb. per hour. Other carding details: spring-tensioned calendar rolls, a 24-gauge trumpet on the calendar, and a 14-gauge trumpet on the coiler head. Drawing is standard. Long-draft roving is the normal procedure, 2-hank roving being made from 55-grain sliver, and 1-3/8 inch staple. Spinning is double-creeled, short or long draft. Twist multipliers range from 3.25 (for 3.0 denier dynel, 1-3/8 inches long) to 2.75 (for 6.0 denier dynel, 2-inches long). (*Textile Journal of Australia*, Aug. 21, 1950).

REVOLUTION IN PALLET DESIGN

A pallet development from Sweden promises longer pallet life and reduced maintenance. The new pallet is called a 4-way, block-leg pallet. It has conventional deck boards, or flooring, on top and bottom, but a new type of wood framing. The framing members are wooden blocks that have been drilled for large holes. The holes are actually access holes, which are located so that the ends of all nails may be clinched, or bent down. It is said the nails thus clinched down in the block-leg pallet will not loosen, and that the deck boards are locked securely to the blocks. (*Modern Materials Handling*, Sept. 1950).

A NEW COTTON SPINS INTO 100s, HAS A TENSILE STRENGTH OF 150,000 PSI

A new cotton, Hopi Acala 50, has unusual fiber fineness and strength. While average Upland cotton breaks at 80,000 pounds per square inch, Hopi Acala 50 has a tensile strength of 150,000 pounds per square inch. Its predecessors, the two new West Texas varieties known as Acala 1517 and Acala 1517W, are recognized as the strongest commercial Upland cottons in the world.

Yet, Hopi 50, which is a hybrid, shows character beyond the strength and fineness range. It does not nep appreciably. It has been spun into yarns as fine as 100s on mill-scale spinning tests, in both carded and combed stock. It has superior appearance, fewer imperfections, and less spinning waste than Egyptian cotton; and yarn strength average about 90 percent of that found in yarns from 1½ inch Egyptian-grown Karnak cotton.

About 350 bales of Hopi 50 are now being test-processed by more than twenty mills cooperating with industry and government research agencies. Ducks, dress goods, tire cords, and sewing threads, as well as other varied textiles, will be made from the new cotton.

Hopi 50 will be given a thorough testing by mill and private laboratories, the details of which will be available to the industry in the spring of 1951. (*Textile Industries*, Nov. 1950, and *Daily News Record*, Nov. 20th, 1950).

VISCOSITY IS THE KEY TO GOOD SIZING OF SPUN-RAYON WARPS

Short-staple rayon and other synthetic yarns have many surface fibers that give their warps an unevenness controllable for weaving purposes only by proper sizing. Those surface fibers must be laid down evenly on the body of the warp thread. Viscosity of size solution is one of the most important factors governing the laying of the fibers to the thread.

Viscosity is understood best in terms of what it does. Low-viscosity sizes do not leave enough size upon the yarn to hold the fibers down. That is the reason why continuous-filament yarns, which have no protruding fibers, are sized with low-viscosity solutions. Medium-viscosity solutions work best on spun rayons.

Viscosity is also important because it affects the weaving efficiency. A series of tests have demonstrated those effects.

A size mixture of starch and sodium cellulose glycollate was made up, with a viscosity of 29.5. The warps from this sizing were tested in the weave room, and warp stops of 1.1 per 1,000 picks resulted.

Similar warps were then sized with low-viscosity gelatine size. The warp stops were 29.5 per 1,000 picks.

The general recommendation for viscosity: not lower than 750 centerpoises at running temperature. Much higher viscosities may be required, depending upon the fuzziness of yarn and the tackiness of the wet film.

Stretch must also be controlled during the slashing of spun-rayon yarns, which generally have low initial elongation. A maximum of 2.5 percent stretch has been found to be a practical guide for spun-rayon yarns. Yarns with better elongation may be slashed with 5 percent stretch.

The mechanical factors of sizing spun yarns appear to outweigh such chemical factors as affinity between fiber and size. This deduction is based largely on the fact that spun yarns receive, under pressure of the squeeze roll, a penetration of size into the many fine cavities between twisted fibers. Upon drying, these sizing deposits act as points of attachment to the overall size film.

Important mechanical factors are: viscosity, elasticity of size film, ability of size film to withstand shock and tension in the loom without breaking, squeeze-roll weight and pressure, size-bath temperature.

Certain components of the size may enhance the adhesive quality. Starch derivatives of the British gum type and of low solubility are examples. To reduce brittleness and shedding, softeners and lubricants are added to the size. These components also improve the residual elongation of the warps.

Economical starch blends are made by reinforcing the body and viscosity of highly soluble dextrines. Water-soluble cellulose derivatives (15 to 25 percent) are used for this purpose in size mixtures for blends of viscose and wool or synthetic protein fibers. A mixture of starch derivatives and solubilized casein is recommended for spun acetate, or blends of acetate with viscose or wool. The same size works well on dynel fiber; while tapioca gum and glue have been used mainly in the sizing of nylon and wool blends. (*Textile Mercury & Argus*, Oct. 20th, 1950).

GLEN RAVEN YARN-DYES ORLON FOR AWNING STRIPE

Glen Raven Cotton Mills uses a pigment to yarn-dye awning stripes woven from yarns made of orlon, the new acrylic fiber. The dyeing process was developed in cooperation with Interchemical Corporation. The awning-stripe fabric is 6-ounce, 31-inch material that is expected to be priced within the $2-$3 a yard range. Acrylic fiber, when spun and then woven into this fabric,

is said to have a fabric-life ratio of 5 to 1 over other awning fabrics. (*Natl. Canvas Goods Mfrs. Review,* Aug. 1950).

FIRE HAZARDS IN ELECTRICAL SYSTEMS

Installations of electrical equipment account for 19 percent of total industrial fires and 16 percent of total damage of all Factory Mutual fires. Short circuits or grounds due to insulation breakdown cause most fires of wiring origin. Time, temperature, oil, and accidental bumpings are major obstacles to well-maintained insulation and wiring.

Important maintenance checkup points: improper connections of armored cables to switch boxes; wear on the cable metal edges caused by machine vibration; worn drop, extension, or fixture cords.

A grouping of cables should be avoided if possible; but if required, each cable should be wrapped with asbestos tape with a 50% lap, and then painted with a solution of silicate of soda.

The most frequently encountered causes of motor fires are: 1) single-phasing due to poor contacts in motor controllers, or a blown fuse in a three-phase supply circuit; 2) overloading and lack of proper overload protection; 3) winding failures caused by dirt, oil, moisture, old age, or mechanical damage; 4) overheating of amortisseur winding in synchronous motors, usually caused by loss of d-c field excitation; 5) worn bearings, and improperly aligned motor; 6) improper application; 7) excessive vibration; 8) short circuits in leads because insulation is worn or oil-soaked; 9) puncture of insulation by lightning; 10) sparks from commutator-type motors. (*Industry & Power,* Oct. 1950).

COST OF COTTON AND LABOR

Cotton prices have jumped 322 percent, wages advanced 215 percent, while the selling price of cotton goods moved up only 145 percent during the period of 1940-50. The statistics are based upon an analysis by Samuel H. Swint, president of Graniteville Company, Graniteville, South Carolina.

Mr. Swint said, in analyzing more recent trends, "We use about 100,000 bales annually. In the past several months, the price of cotton advanced approximately $60 a bale. This amounts to 6 million dollars a year additional cost for cotton alone. A wage increase in September amounted to approximately 10 cents an hour, or an additional 1 million dollars to annual payroll. Increases in cost of dyes, chemicals, fuel, repair, maintenance, and other general costs amount to another half million dollars annually.

"The three types of recent increases amount to a total of $7,500,000 which has been added to our annual cost sheet.

"Since we produce about 100 million yards of cloth annually, simple arithmetic shows that our cost has increased during the past several months by an average of 7½ cents per yard.

"On the first of November, 1940, the price of New York spot cotton was 9.77 cents per pound. Ten years later—November 1, 1950—it was 41.20 cents per pound. The jump was 31.43 cents, 322 percent.

"Hourly wages, on the first of November, 1940, averaged 40 cents. Today, they average $1.26. The increase was 86 cents an hour, 215 percent.

"Vat-dyed 2.50 drills in the suntan shade, Sanforized, sold at 18½ cents per yard in 1940. Today, they sell at 45¼ cents per yard. The increase was 26¾ cents per yard, or 145 percent.

"Since roughly 85 percent of the cost of a 2.50 drill is made up of cotton and labor costs, we see that the selling price of cotton goods has not advanced to the same extent as the cost of cotton and labor required to make those goods.

"Without economies that have been effected through improved equipment and better methods in the mills, cotton cloth would be selling at a much higher price. And of course, the garment manufacturers, as well as others along the way, have experienced similar cost increases. When the price of cotton goods is considered in the light of these facts, it is not hard to understand why the retail price of a garment is from 50 to 75 cents more now than it was only a few months ago." (*Daily News Record,* Nov. 14, 1950).

RESINS IMPROVE GOOD FABRICS

Urea formaldehydes were the earliest resins used as crease-resistant agents on rayons. They were ineffective on cotton because they weakened or tendered the cotton fabric. Newer resins, such as melamine formaldehydes, give wrinkle resistance character to cotton fabric. The melamine product is said to have greater bath stability and to promote greater durability of fabric to wet cleaning than former products. In fact, many cotton fabrics had less tensile-strength loss after treatment with the newer resins.

In the case of wool, some progress has been made in a completely new method of applying melamine resins that eliminates the need for high-temperature treatment. The formaldehydes, called thermo-setting resins, produce better wash fastness, good tensile strength, clear shades, resistance to snagging and stretching, and shrink control in wool.

Other new types of resins called thermoplastic resins are of growing importance. They are ap-

plied as a water emulsion of the already polymerized resin, after which they are dried on the fabric, then heated and pressed by calendering to produce a durable and glossy finish. (*Textile Journal of Australia*, Aug. 21, 1950).

APPLICATION OF DYNEL

Dynel is said to have shown good crease-resistant properties in fabrics. In blends with viscose for suitings, it is said to have demonstrated improvement over viscose-acetate, resin-treated fabrics.

A blend of 60 percent 58s grade wool and three-denier dynel resulted in a fabric that was said to have the equivalent texture of one made from 64-70s wool. Thus, upgrading of wool may be a desirable characteristic of the new fiber, in addition to its fabric qualities of drape, crease setting, and dimensional stability. (*Textile Bulletin*, Oct. 1950).

AUTOMATIC SIZING CONTROL SHOWN BY BRITISH

A new sizing control is said to permit, for the first time, the automatic take-up on the warp of size, irrespective of variations in sizing conditions whch commonly occur. The announcement, with little technical details, states that by turning a knob the slasher operator can regulate the percentage of size taken up by the warp.

Developed at the Shirley Institute, the new control is now being shown to British mill men. (*Daily News Record*, Nov. 15, 1950).

PLANT PROTECTION—IN CASE OF WAR

America faces a terrific fifth-column problem in event war comes, especially in protecting defense plants against sabotage. The Munitions Board recently issued a small book entitled "Principles of Plant Protection". It is available from the Superintendent of Documents, U. S. Government Printing Office, Washington, D.C. Price-15 cents. The book explains espionage and sabotage methods, what to do in case of atomic or other bombings, and outlines measures the mill can take to protect property and employees. (*Textile Industries*, Nov. 1950).

NEW YARN MOISTENING AND WINDING APPARATUS

More constant yarn tension and uniform moistening are said to be the chief results obtained by new auxiliary equipment for winders patented by Foster Machine Company, under USP 2,526,848 and 2,526,849.

Under present methods of winding, yarn tension increases as yarn travel speed builds up and as cones get larger on the winding drum. Yarn moistening and conditioning is also affected by this change in yarn travel speed. At high yarn-travel speed, less moisture is picked up. Without methods of control, the amount of moisture in the yarn could vary several hundred percent.

The new method employs a circular moistening disc, with suitable guides, that runs partially in the moistening trough. One yarn guide is mounted so that it guides the yarn against the circular disc for moisture pickup. Being adjustable, this guide can expose varying lengths of yarn to the moistening disc. At high yarn-travel speeds, the length of yarn exposed to the disc is greatest. At low speeds, the length is shortest.

Thus, additional moisture pickup is obtained by exposing more of the yarn to the moistening device as a means of overcoming the problem caused by rapid increases in yarn-travel speed.

Yarn tension is similarly handled, in order to cut down the tension during high yarn-travel speeds. This result is said to be accomplished by action of the special guides that reduce the angle of path travelled by the yarn. As winding speed increases, the angle of path travelled by the yarn is decreased.

PORTABLE TURNTABLE HANDLES HEAVY ROLLS

A new handling tool acts as a real time saver in turning heavy rolls of all types on loading platforms, and in box cars, warehouses, and shipping departments. The turntable weighs only 28 pounds, but has a 10,000 pound capacity. One illustrated use shows the turntable turning a large roll inside a box car so that one man can handle the unloading through the open door. Mfr: Engineering Products Co., Chicago, Ill. (*Modern Materials Handling*, Sept. 1950).

ATOMIC ENERGY AND TEXTILES

Application of radioactivity to textiles in Britain include a gauging instrument to measure the thickness of moving sheet materials such as laps, according to an editorial in the British Rayon and Silk Journal of August, 1950.*

The instrument was said to utilize beta rays which pass through the material, and to be effective possibly for controlling the thickness of picker laps. The intensity of radiation as received in the instrument's ionization chamber is proportionate to the thickness which can be indicated and recorded electrically. No contact with the material itself is necessary.

Other applications of atomic energy to textiles were as follows: traces of radio-active isotopes added to size solutions and lubricating emulsions have proved highly effective for control purposes in nylon yarn processing; radioactive

gas introduced into air-conditioning systems has revealed faults of circulation where prefect functioning was essential for health reasons or for processing accuracy; tests for lubricants and bearings were expedited by irradiating the parts to be tested, since the tests had to proceed only to the stage where radioactivity was detected in the lubricant; practical equipment has been evolved for static elimination in yarn processing and weaving.

* (The reference may be to the instrument described in November TTD, page 920, and October Textile World, page 156. If so, it is manufactured by Baldwin Instrument Co., Ltd., Dartford, Kent, England—Editor.)

READERS SAY

The promotion letter entitled "Would You Write This Letter?", which was carried in the November issue, was backed up by the first page of the classified section. I'd like to mail this letter to a friend, but do not wish to cut out that particular page.

How about printing again, and backing up with material that is expendable, such as an ad?

Thanks for suggestion. This letter will be found on page 10 of this issue, backed up by an ad and non-timely matter, both expendable—Editor.

"Thanks for the November issue. It's deluxe. The front section saves a technical superintendent like myself a lot of time."

I ran across a humorous piece in an engineering magazine, but of course you wouldn't want to digest it. (*Maybe, we should—Editor*).

Anyway, it's a take-off on production engineers, and perhaps you'd prefer that I skip it. (*Anything our readers say, we take seriously—Editor*).

The story was quoted by W. J. Webb, page 30, December *Modern Materials Handling*, and taken from Mark Space's book *How to Run a Bassoon Factory*. You don't have to print it, unless you want to . . ." (*We will print, and thanks for full reference—Editor.*)

In the chapter on "Time Study and Costing", Space says, "You may remember that among the necessary experts I included a time-study man. It is his job to find out how long it takes a man to produce a bassoon, and, accordingly, how much you should pay men for producing it. He proceeds something like this:

1. He sets a man to work on making a bassoon and times him to a hundredth of a second. This gives him a figure to work on.

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2. He then takes his figure and applies the following reasoning:

a. It took old Sam two days to make that bassoon, but he wasn't working as hard as he might. Therefore divide by two—One day.

b. Anyhow old Sam is old and not representative. Therefore divide by two again—half day.

c. On the other hand, old Sam has had a lot of experience. Therefore multiply by two—one day.

d. But there were seventy-nine periods of two minutes when he didn't do anything. Therefore subtract 158 minutes—five and a half hours.

e. But he'll get tired later in the day, so we'll allow him half an hour. Therefore add half an hour—six hours.

f. On the other hand, if the rate is too tight old Sam will kick up a row. Therefore multiply by two—one and a half days.

g. Anyhow we always leave a bit of margin so let's call it TWO DAYS.

CONTINUOUS DYEING BY MOLTEN-METAL STANDFAST PROCESS—A SPECIAL REPORT.

Molten metal is now used to reduce vat dyes and aid penetration. The process produced dyed goods for some years at the Lancaster (England) plant of Standfast Dyers & Printers, Ltd., but knowledge of the process was not made public until 1949, when patent papers were issued. It is now being licensed to machinery manufactures.

The Standfast process is a continuous one of straight dyeing, with speeds up to 120 yards per minute.

To begin bulk dyeing, the dye liquor is pumped through a heater into the dyebath, located at the surface of a column of molten metal. The dye reaches the dyebath at a temperature of 70 to 75 degrees C., and is held at that temperature.

As soon as the dyebath is full, the machine is started and the fabric, which is preheated by passage over steam-heated cylinders, passes through the eight inches deep bottomless dyebath directly into a column of molten metal in a U tube held at 95 to 100° C. The length of a passage through the metal is about ten feet, and the fabric leaves by way of a second bottomless dyebath containing strong salt solution floating on the surface of the molten metal. Dyeing is complete when the fabric leaves the metal, and oxidation and soaping are accomplished.

Oxidation and soaping occur in a conventional open-width soaper, with which the dyeing machine operates. Cleaning liquor is then circulated through the dye supply system which is drained

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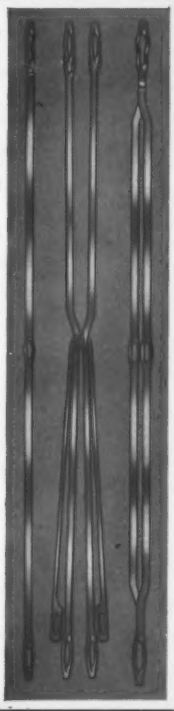

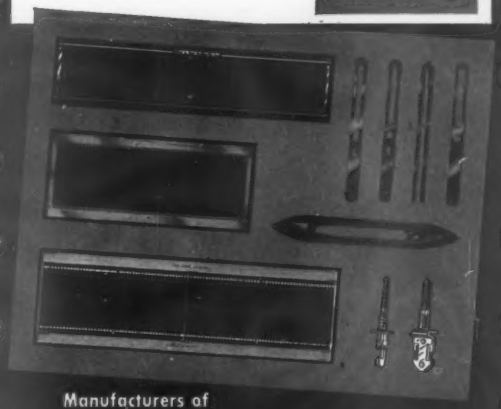

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WOULD YOU WRITE THIS LETTER?*

Dear———,

The last time I saw you, you were saying that the textile industry was smack dab in the middle of its greatest period of technical growth. You were right. But here's something you didn't know.

Our mill has got its finger on each and every technical development made. We know about many and practically all of them before they're ready for market.

If you are not acquainted with our technical detective, take a look at my copy of the *TEXTILE TECHNOLOGY DIGEST*, December issue. We get quick reading of all the more important developments and articles from a special section, up front in the magazine. Our executives appreciate this, because we don't buy enough copies of the DIGEST for everyone.

We can order reprints of this special section for a nominal cost, depending upon the number of pages in the section.

However, we could not do without the complete and pre-classified section in the back of the DIGEST. It contains digests of every textile technical article published.

I just thought that you, of all people, should make one acquaintance with the DIGEST. Your president might like to know that a copy or so of the TTD would be as good a Christmas present as the mill could buy for you.

Yours sincerely,

***You don't have to write this letter, if you're a friend of the DIGEST. Just put your friend's name on this page, tear it out, and mail now. He will even know that our address is: Editor, TEXTILE TECHNOLOGY DIGEST, Institute of Textile Technology, Charlottesville, Virginia.**

A single control panel located near the dyeing unit allows one man to operate and control the dyeing. Total production for one machine during a typical day at Standfast was 38,685 yards, in four separate dyeings, one as small as 30 yards, another as large as 21,078.

The machine may be installed at the leading end of existing continuous open-width soapers. A convenient arrangement is an eight-beck soaper giving two becks for oxidation, one for rinsing, three for soaping, and two for final rinse. The molten-metal unit occupies little space, and five 24-inch diameter fabric preheating cylinders provide sufficient heat for speeds up to 120 yards per minute.

Advantages of the Standfast method: increased penetration and fastness equal to the best jig dyeing; greatly increased production per man hour; process never varied for different classes of vat dyes; technical control facilitated by small laboratory unit of the machine from which exact shades and dye mixtures may be predetermined; uniform shades throughout long and short runs; simple cleaning; savings in steam, water, and dye. (*Dyer*, Sept. 8 and 22, 1950).

OTHER FEATURES OF THIS ISSUE

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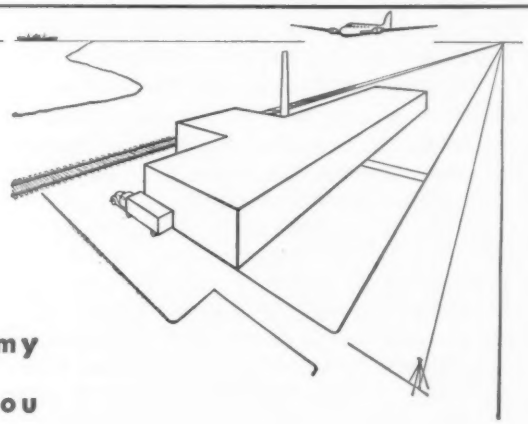

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